

# AIR Pictorial

and AIR RESERVE GAZETTE

JANUARY, 1956

The INTERNATIONAL AVIATION ENTHUSIASTS' Monthly



Vol. XVIII No. 1

There is excitement, exhilaration, in the lift and thrust of jet flying. There is also a deep and lasting satisfaction, known only to those who fly. Ask these men to describe it and words fail. Ask them to give it up and they worry. For once you have shared the tranquillity of that new world above the clouds, you cannot easily forgo it.

# Future perfect...

*in which a young man will have satisfied his need for action and will be enjoying the security of a well-paid career*



Many young men dream of joining this brotherhood of flight. They sense the magic. They see that the future of mankind lies in the air and want to help fashion that future.

These men can realise their dream. They have within their grasp the chance of a lifetime of exciting and satisfying work. With the Royal Air Force, pilots and navigators fly often. They fly far afield. And they manage some of the finest machines in the world: Canberra, Valiant, Hunter — these names are but the prelude.

"But there's more to a life than flying" you may say. The Royal Air Force knows this and has planned accordingly.

#### *Flying Plus*

Aircrew do much more than fly. They are often seconded for important work in Britain and abroad. Training others, international liaison, scientific exploration—these are but a few of the diverse and important missions to come the way of aircrew personnel. And the new Direct Commission scheme provides the opportunity to make the Royal Air Force a career. You can join, as an officer, with the certainty of a continuing and satisfying job



The Royal Air Force *Flying ...and a career*

until you retire with a pension. Or you can choose, if you wish, a twelve year commission, with the option of returning to civilian life after eight years. In this case you return with a handsome tax-free gratuity, far more than you are likely to save in a similar time in any other profession. Pay, as you rise in the service, is equally realistic. A Flight-Lieutenant of 25, drawing full allowances, can now earn more than a thousand a year.

Sporting facilities in the R.A.F. are good and convenient and there is leisure to enjoy them. Travel, too, is routine, accepted and enjoyed as one of the perquisites of a vital job. It is right that this should be so. These men are our first line of defence. They are the heirs of "the few".

#### *HOW TO FLY WITH THE R.A.F.*

*Because their opportunities are great and their work important, standard of entry for aircrew is very high. Education to at least the level of the General Certificate of Education, Scottish Leaving Certificate or their equivalents, perfect physical health, aptitude as well as enthusiasm for flying — to these must be added the ability and personality to lead others. You must also be between 17½ and 26. If you have these qualifications you have the chance of a career that is both rewarding and worthwhile.*

*Write at once for further details of the schemes of entry and for an interesting, informative booklet on flying with the R.A.F. to the Air Ministry (GR. 302a), Adastral House, London, W.C.I. State date of birth and educational qualifications.*



#### *Responsibility . . . and relaxation*

Linked with duties that demand your utmost, come sporting opportunities of the greatest scope. Winter sports, ice-yachting, gliding — these are well within your means.



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No. 1

## No Help for Civil Pilots

IN common with most aviation journals, and indeed with other organisations concerned with aviation, *Air Pictorial* is constantly receiving requests from young men for information concerning the means whereby they may qualify as civil air pilots. This is an excellent thing: boys should be encouraged by every means to contemplate a career in the air, whether it be civil or military.

But in every case the would-be pilot is condemned to receive a cold douche of discouragement when the point is reached of answering the inevitable question, "How much will it cost?" Because to practically all these boys the answer involves the dashing of all their hopes. The minimum qualifications for an applicant to an air operator are a Commercial Pilot's licence and an Instrument Rating. These are the bare requirements for a pilot who is to fly for hire or reward, and even then he is limited to flying the smallest types of commercial aircraft. So far as most operators are concerned—certainly those operating on more than quite a modest scale—the pilot so equipped is barely employable even in a subordinate capacity. Yet even these elementary licences will cost the student—or his parents—somewhere between £1,600 to £2,000, including the cost of maintaining himself while he is under training. In other words it costs nearly as much to become a civil air pilot as it does to qualify as a doctor.

It is quite certain that if all the young men who wish to become doctors had to bear the entire cost, there would soon be a grave shortage of doctors. But in fact the medical student, like undergraduates at the

Universities, can draw substantial assistance from the State in grants and scholarships. Not so the student air pilot. The State aids doctors, engineers, scientists in their studies, but the boy who wishes to hitch his career to the air age is denied any help whatsoever.

How has this come about? It is the result of a ruling by the Ministry of Education that it cannot give assistance to work-study, that is, to courses of study involving practical work. It is held that as the training of a civil pilot consists to a considerable extent of flying, of which 200 hours are necessary to qualify for a Commercial Licence—among, of course, other things—the rule regarding practical work—debars him from help.

The ordinary mortal will stand baffled by this example of the working of the official mind. Is it possible for a man to qualify as a surgeon without even having practised the elementary operation of the surgeon's implements and techniques? Or a Bachelor of Science to obtain his degree without hours of practical work in the laboratory?

The surgeon must combine theoretical with practical training. He must study anatomy, physiology, and other subjects. The student-pilot's training is on similar lines. He cannot become a pilot without studying navigation, meteorology, and air law. Neither can he obtain his licence to practise his profession without having done "practical work". But the surgeon student can get a grant. The student pilot cannot.

Is it, therefore, surprising that there is at present a serious shortage of recruits to civil aviation? Some

may say "What about the Royal Air Force? Are there not ex-Royal Air Force pilots available". The answer is that while there are a number of applicants from this source, they are either too old, or have taken no trouble to obtain civil licences. A large proportion of applicants are unsuitable for temperamental or other reasons. It must be borne in mind that the really good young officers can obtain permanent commissions. But it is precisely this type of young man that the air pilots' profession calls for. Good education, sufficient intellectual ability to undertake advanced technical training, personal integrity, super-physical fitness, powers of leadership, all these qualities are required to a high degree in the candidate for employment as a civil pilot, who must be the type who will ultimately become a Senior Pilot First Class, with four rings on his sleeve, an Air Line Transport Pilot's Licence, and several others, involving high competence and advanced knowledge in mathematics, aeronautics, engineering and other subjects as well, a highly qualified professional man with heavy responsibilities in human lives and an equipment costing over a million pounds.

Plainly matters cannot be left where they at present stand.

### THIS MONTH'S COVER

CURRENTLY undergoing acceptance trials at Edwards A.F.B. in the Mojave Desert is the side-by-side-seat Convair TF-102A combat proficiency trainer. Like the F-102A it is powered by a P. & W. J57 turbojet, but the canopy is wider and the intakes differ (see *Air Pictorial*, December 1955, page 384, for comparisons in the photograph of the TF-102A and the F-102A).

# MACH 2 FIGHTERS . . .

## The Possibilities and the Problems

DURING the past year a new concept has filtered through the veil of security, the Mach 2 aeroplane—or more specifically the Mach 2 fighter. It was, perhaps, obvious that this would be the next step in man's ambition, but more than one eminent authority has expressed the view that it is somewhat premature. After all, however glibly the term may be used by scientists and politicians, Mach 2 is *twice* the speed of our present fighters. It is entering the zone of thermal troubles when the Mach 1 vehicle is still far from having reached the complete solution of its own problems.

One only has to look at the variety of designs offered as transonic and low supersonic fighters to realise that designers are still groping, if not in the dark, at least in the shadows. If further evidence is needed that we are still only on the threshold of supersonic knowledge, one can look at the extensive modifications made to almost every high-speed aeroplane. The Americans are well ahead with low supersonic *production* aeroplanes, so perhaps one may take an example without being considered invidious.

The F-102 delta fighter was stuck fast at Mach 0.9 regardless of the turbojet and afterburner thrust poured into it. An energetic modification programme, aided by all the resources of the N.A.C.A., got the F-102A through Mach 1 so that it can fly level, or climb, supersonically. "Area rule" was applied to the fuselage, the wing

by

JAMES HAY STEVENS

section was altered, the wingtips were revised and the cockpit cleaned up.

Wind tunnel research had suggested that the tribulations of supersonic flight, although severe, were well understood. However, the more aeroplanes that have flown supersonically, the more troubles seem to arise, and practical experience suggests that there is some way to go before there is a supersonic fighting vehicle. Those already flying, the two P-Is in this country and the few hundred F-102As and F-100s in the U.S.A. are not, as far as the writer is aware, aeroplanes that have *passed* their individual drag peaks.\* The American "X" series of research aeroplanes have done this—without, apparently, finding particularly calm air beyond.

Why then, if things are so difficult, are Britain, France and the U.S.A. racing ahead with ideas for Mach 2 fighters? The answer, of course, lies in the possibility, or probability, of the supersonic bomber.

**The Reason.** First flight of that much-publicised secret, the Convair XB-58 Hustler is now not far off—and the Hustler has been credited in the press with speeds between Mach 1.3 and 1.5 at great heights. Experience has taught us since the war that what the West can do, the East can do, if not better, at least just about as well. The Mig-15 came out of the hat in Korea and proved superior to all the West's fighters save the Sabre—and the MiG-15 was actually even superior to the Sabre at higher levels. The Bison and Badger have shown that offensive types equivalent to those of the West are in service behind the Iron Curtain. So why should there not be a Red Hustler on the way?

Neglecting, for a moment, the problems associated with such a fast bomber, particularly the range/fuel question, what does such an invader mean? Taking the speed of the hypothetical enemy as Mach 1.4, it will fly at about 900 m.p.h. in the stratosphere—or, more graphically, 15 miles a minute. Suppose, then, this bomber can be detected by radar 150 miles off the coast, there is only ten minutes to plot its course, warn the fighters, and get them up to its level in an intercepting barrier.

### No second attempts

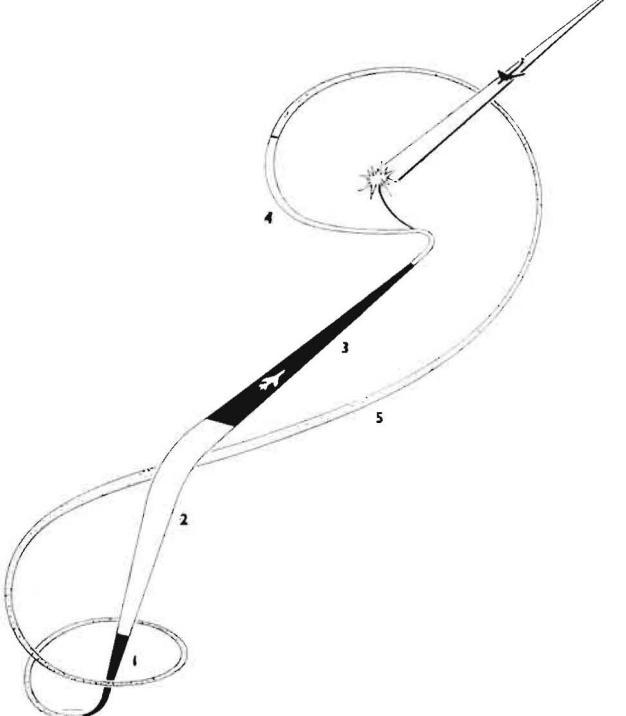
It must be remembered that the bomber is covering fifteen miles every minute of delay. Therefore the fighters must climb at a terrific rate to the bomber's altitude, which will probably be about 60,000 feet—the practical limit of the turbojet, where the thin air puts the fighter at a manoeuvring disadvantage. In any case, at Mach 2 (1,350 m.p.h.) the turning radius is huge and it will take a long time to fly round, say, 180 degrees.

One thing is clear, there is no time for errors or second attempts, the fighter must be directed accurately on to the target in the absolute minimum time. Remember that if the enemy is carrying a nuclear weapon toward our tiny island he must be destroyed several minutes

\* See "Technical Notes," November, 1955, pages 338 and 339.

Diagram (left) shows the flight path of a high-altitude supersonic interceptor powered by a jet of the Gyron class, and a liquid propellant rocket engine such as the Spectre.

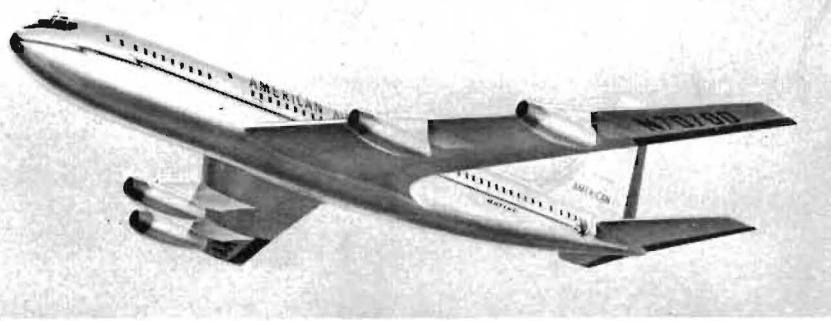
1. Gyron with reheat for rapid take-off and initial climb. 2. Gyron with reheat supplemented by Spectre to maintain rapid climb to operating altitude and to accelerate to supersonic interception speed. 3. Gyron with reheat to maintain supersonic interception speed to target. 4. Gyron with reheat supplemented by Spectre to provide excess power essential for manoeuvrability in attack. 5. Gyron without reheat for maximum fuel economy on return flight.



without cutting stringers or frames—a sort of judo technique. Technical details have not yet been divulged, but the company claims that the many small windows are lighter than the usual sparsely-spaced large ones. This may well be the case, since little structural reinforcement will be required, and the small inset glass panels may even be able to "work" as skin. Normally, the thick double plastic area of a window is much weightier than the metal skin.

The use of laminated glass instead of plastic is new for windows, as distinct from windscreens, and will be stronger and heavier area for area. The actual size of the windows is 17 ins. high by only 9 ins. wide, that 11 ins. of metal skin between.

The windows are so close that each pas-

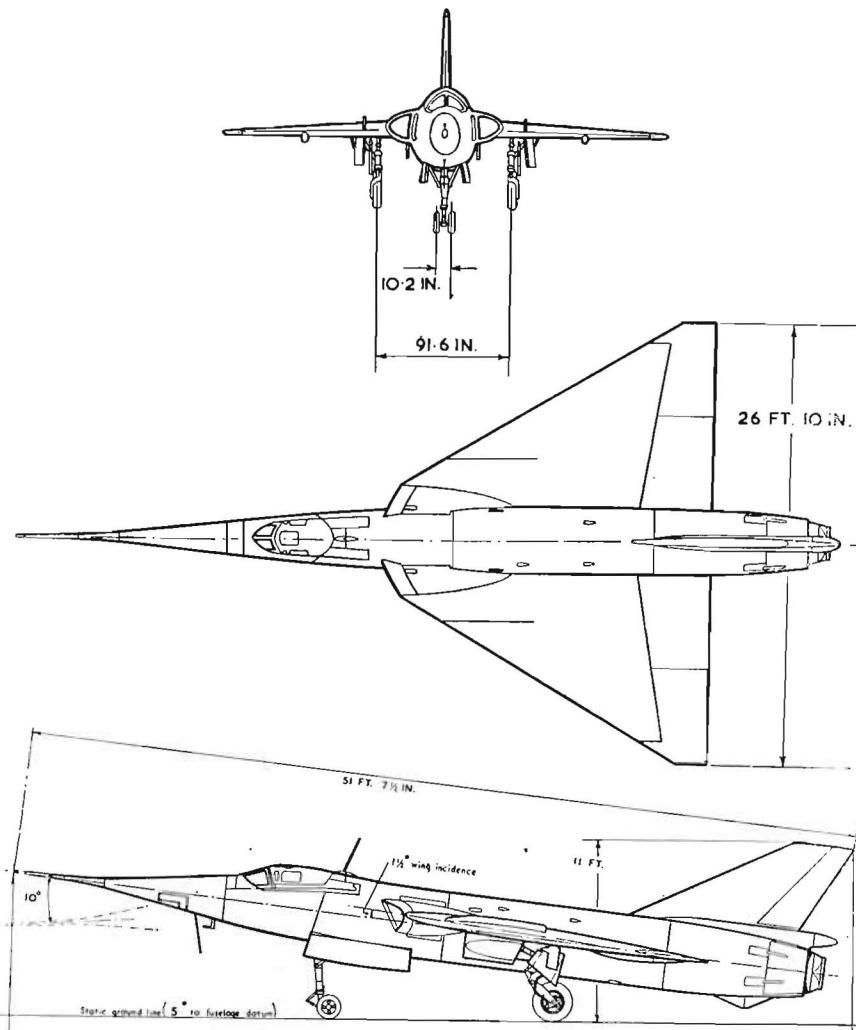


Passengers will get an excellent view from the Boeing 707 owing to the large number of windows.

senger will have one of his own, between the seat rows, and will also be able to peep

through the one beside his seat and that beside the seat in front.

## Fairey Delta 2



This is the first official general arrangement drawing to be released of the Fairey Delta 2. It confirms a number of features which have been published hitherto only as intelligent surmise. Note the 10° drop of the "drawbridge" nose, the hinge line aft of the cockpit, and the 1½° wing incidence. The Fairey Delta 2 may be the fastest single-engined aircraft flying today. Readers will know that the Minister of Supply officially stated on 11th November 1955 that it was regularly flying faster than sound in a climb.

## Sowing by Air

**F**Ollowing an experiment in which 100 waterlogged acres on two properties in the Wimmera district of Australia had been sown, in two hours, with wheat scattered from a light aircraft flying at heights between 20 ft. and 60 ft., Mr. Alpin Johns of Dooen near Horsham, owner of one property, 40 acres of which were sown this way, reported that 80 per cent of the seed sown on all but land in the worst condition had germinated. This was encouraging because on the day after sowing, nearly another 2 in. of rain fell, submerging much of the seed, the rest of which floated. Had Mr. Johns been able either to turn sheep on to the land to trample in the seed or to harrow it, the results would have been better. So heavy was the August rainfall in Wimmera that much of the land has had to remain unsown. The experiment shows that it could have been sown from the air with some success.

## Friendship Improvement

Fuselage of the Fokker Friendship has been lengthened by adding 3 ft. between the leading edge of the wing and cockpit.

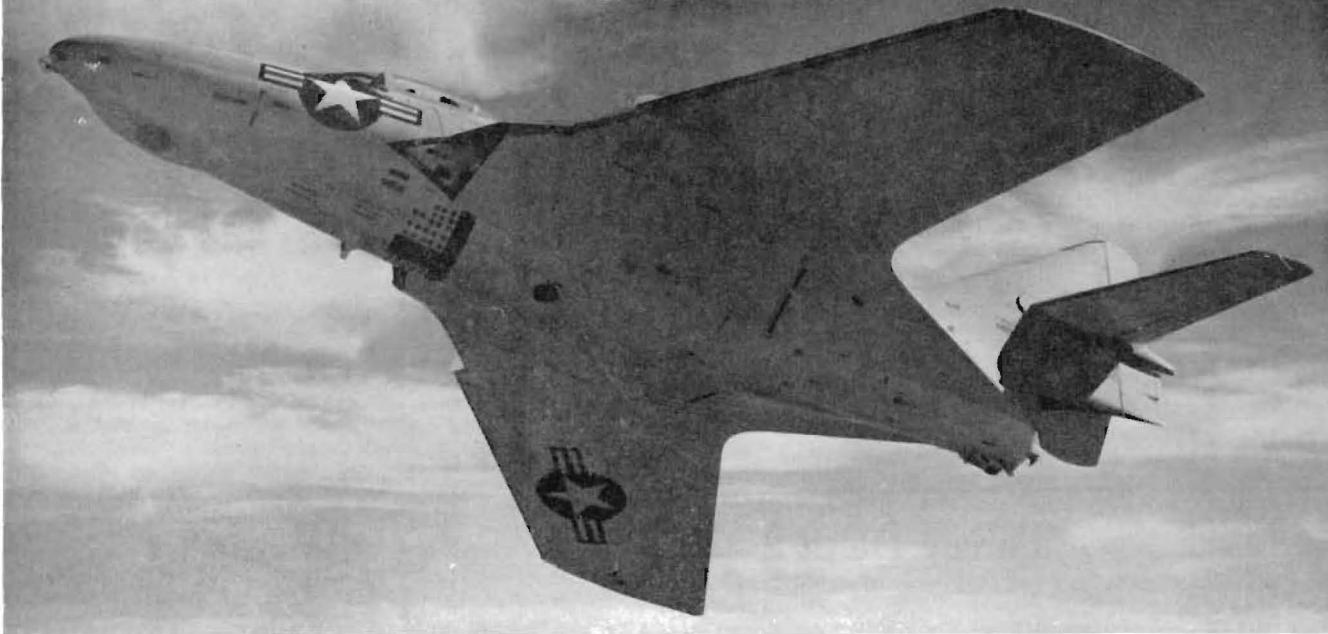
The second prototype will have the new fuselage of 76 ft., which will have room for 32 seats plus cargo. The increase in length is expected to have little effect on the Friendship's performance.

## New Helicopter

**W**INNER of the United States Army's utility helicopter design competition, the Bell XH-40, the maker's claim, will be capable of matching the speed of many of today's light aircraft.

It will be the first helicopter in which in-flight blade tracking is possible. The pilot will be able to make the necessary changes in flight.

Powerplant of the XH-40 will be the new Lycoming XT53 gas turbine.



An air-to-air photograph of the U.S. Navy Grumman F9F-8 Cougar reveals clearly for the first time the vertical camera installation under the nose and the "colander" air brakes parallel with the air intakes.



First of twelve Martin PBM Mariner amphibian long-range reconnaissance flying-boats has now been delivered to the Royal Netherland Air Arm under the Mutual Defence Assistance Programme provisions.

Recently handed over to the Air Transport Command of the Royal Canadian Air Force is this Sikorsky S-58 which will be used for transporting supplies under winter conditions. Hitherto, only the U.S. Army has taken delivery of S-58s, under the designation H-34A.





The A52 series was divided into blocks. Ex-R.A.F. Mosquito F2 (DD664) shipped to Australia was numbered A52-1001. Australian-built FB40s were numbered from A52-1; PR41s from A52-300 and the FB41s (shown illustrated) from A52-500.

# COMMONWEALTH MILITARY SERIALS

## I—AUSTRALIA

IN 1910, two aeroplanes, a Bleriot monoplane and a Wilbur Wright biplane were introduced into Australia. The machines were perfect in themselves, but, there being no person capable of utilising them, they were dismantled and their engines cast into the sea—to avoid import duty! However, the following year, with an aeroplane available, the first Australian obtained the coveted Royal Aero Club Certificate (No. 199), his effort being officially witnessed by four members of the Aerial League of Australia. Military aviation soon followed: in 1913 two B.E.2As were shipped out and used at Point Cook, Victoria, where a flying school had been newly established. It was to become the centre of Australian flying training.

On the outbreak of war in 1914, a Maurice Farman Seaplane, owned by a citizen of Sydney, was presented to the Government; it accompanied the Australian Expeditionary Force to New Guinea, but it is doubtful if it was much used and it ended its days at Point Cook. There was little need for an identification system in those early days, the few aircraft that reached Australia from the U.K. retained their R.N.A.S. or R.F.C. serial numbers. Examples at Point

Cook 1916-18 being: 8752 and 8753 Graham White XVIs, 8976 Bristol Scout and B2802 and B2803 D.H.6s.

An Australian Flying Corps formed in 1915, expanded from a nucleus of trained pilots and airmen, to four squadrons, three of which served on the Western Front and one in the Middle East. A training wing was also set up in England. All the aircraft used were British provisioned and they remained Imperial property. Thus their original R.N.A.S./R.F.C. number was retained, but the Australian character of the units concerned was usually revealed by silhouettes of Boomerangs or Emus, marked upon their aircraft. After the armistice, the aircraft were returned to R.A.F. depots.

The A34 series allotted to the D.H.84 Dragon included eleven impressed civilian aircraft. A further eighty-seven were built in Australia between 1942/43 for R.A.A.F. radio and navigational training.



The patriotic peoples of Australia, under a scheme sponsored by C. Alma Baker, C.B.E., subscribed for forty-one aircraft between 1916 and 1918. An aircraft from current British production was selected to bear the presentation details and these machines were numbered AUSTRALIA Nos. 1 to 41. Wherever possible, these aircraft were despatched to Australian Flying Corps units. AUSTRALIA No. 1 was F.E.2b No. 7027, named "The Sidney Kidman" after the Australian "Cattle King"; the 41st and last, S.E.5A C6424, presented on 9th November, 1918, was aptly named "THE VICTORY SCOUT". It is appropriate to recall that twenty-two years later the Hurricane V7795 bore the inscription—"ALMA BAKER—AUSTRALIA".

The establishment of permanent Air Forces in the British Commonwealth can be said to date from a decision of the British Government in 1919 to present a hundred aircraft to each of the Dominions, from the vast post-war surplus of the R.A.F. Under this "Imperial Gift", Australia received her 100 aircraft, plus an additional 29 in part replacement for those aircraft presented by her peoples.

Australia then started her own identification system. A prefix "A" for Australia was followed by a type number, for each different aircraft type. The D.H. 9A was A1, the S.E.5A—A2 and the Avro 504K—A3. The type number was followed by a hyphen and then a serial number for each machine of the type. Thus the fifty S.E.5As were numbered A2-1 to A2-50. Most of these ex-R.A.F. machines remained crated until 1925, when they were assembled to equip the newly-formed Royal Australian Air Force which had received Royal Assent in 1923 as a separate service in the Defence Forces of the Commonwealth of Australia.

The Royal Australian Navy in 1921 had ordered six Fairey IIID seaplanes. On delivery, these were allotted the Australian Naval numbers ANA-1 to ANA-6. This series was later abandoned and the aircraft were re-numbered in the "A" type number series. Thus the system is an Australian Service Aircraft series, not only a R.A.A.F. series.

In the 'twenties small batches of additional or replacement aircraft were purchased

(Continued on page 14)

# Commonwealth

## Serials

(Continued from page 13)

from British industry or ex-R.A.F. stock and a few standard types were assembled in Australia. Six new Supermarine Seagulls (A9-1 to A9-6) were purchased in 1925 at a cost of some £10,000 each. To provide spares in 1928, three ex-R.A.F. Seagulls were bought up at a nominal sum of £100 each. On arrival these aircraft proved to be serviceable and were used as complete aircraft—an economical acquisition!

The series halted at A12 in 1929 with Bristol Bulldog IIAs (A12-1 to A12-8). Until shortly before the war, type numbers were then re-allotted as earlier types passed out of service. Westland Wapitis ordered that same year were re-allotted A5 as their type number. Serial numbers on the other hand were allotted progressively. The first eight Wapiti Is of 1929 became A5-1 to A5-8. A further order in 1931 for twenty Wapiti IIAs became A5-9 to A5-28. Then in November 1937 several ex-R.A.F. (Nos. K2257, K2262, K2265, K2268, K2286, K2287) Wapiti IIAs were bought and numbered from A5-29 onwards.

The arms race in Europe had its repercussions throughout the Empire. With more than twelve different types in R.A.A.F. service, the type number series rose. From that time onwards there was no re-allocation of type numbers and they were allotted in a regular numerical/chronological sequence. They reflect the history of their time. A26 for Sunderlands, almost ready for delivery in September 1939, when war detained them in the European theatre. A28 Bostons and A29 Kittyhawks ordered from America to make good the restricted delivery of aircraft from the U.K. A30 Douglas DC-2 through to A45 Ford 5-ATC, mainly civilian aircraft; in all 121 aircraft of various types were impressed up to 30th January, 1944. A49 Dornier Do 24, A50 Ryan STM-2 and A51 Brewster Buffalo indicate the fall of the Netherland East Indies and the remnants of the Dutch Air Forces taken over by the R.A.A.F. Later come A65 Dakotas and A72 Liberators under Lease/Lend and with the tools available—victory. Each separate type has its type number, even a single Northrop Delta loaned to the R.A.A.F. in December 1942 took up A61 as A61-1. It is a moot point whether by coincidence or by an official recognition to superstition that A13 was allotted to the Link Ground Trainer.

Australian industry made a great contribution, producing 3,716 aircraft of twelve different types between 1939 and 1947. Seemingly a paradox, the 1,000th-built Tiger Moth bore the number A17-565, which indicates that Australian industry built not only for their own Defence Forces. In fact, many Tiger Moths built by de Havillands of Sydney were to R.A.F. orders. Of the 214 Australian-built Tiger Moths, numbered in



A1 was first allotted to Imperial Gift D.H.9As in 1920. It was re-allotted in 1934 when eighteen Hawker Demons were purchased from Britain, the first of which is shown above before delivery. By 1939 over sixty Demons were numbered in the A1 series.

the R.A.F. range with black-out blocks between DX437 and DX716, 120 went to South Africa and the remainder to Southern Rhodesia under the Empire Air Training Scheme. Truly an integrated Empire organisation!

A9—the Beaufort will be long remembered in Australia. Here was an Australian-built aircraft, manned by Australians used in the defence of Australia itself. From an unfortunate operational start when seven Beauforts went too late to Singapore, this aircraft became the spear-head of the R.A.A.F. A9-42 struck strong blows, sinking a Japanese destroyer in July 1942 and later placing a 500-lb. bomb on the stern of a Jap destroyer. A9-427 bearing the name "Superman" performed the record number of 145 operational sorties. In a less spectacular, but nevertheless necessary way, A9-171 logged over 1,000 hours at No. 1 Operational Training Unit, R.A.A.F.

The Beaufort provides an example of re-numbering that has no counterpart in the R.A.F. series. When a machine in the R.A.A.F. has extensive modifications it is usually re-numbered within the type series. In all 700 Beauforts were built, of which forty-six were later modified as transport aircraft. These were re-numbered A9-701 to A9-746. In the same way, Mosquito FB40s numbered from A52-1 were re-numbered from A52-1050 on conversion to Mosquito T43s.

The magnificent effort by Australian Units in Europe and the Middle East does not fall into this survey, for their aircraft were obtained either directly from the R.A.F., or from the R.A.F. Lease/Lend allocations. These aircraft were numbered, provisioned and accounted as R.A.F. aircraft, financial adjustment being on the mutually agreed basis of accepting estimates for similar units in the R.A.F.

In the same way hundreds of aircraft with R.A.F. numbers, served under the administrative control of the R.A.A.F. as part of the Empire Air Training Scheme. The Anson (A4) provides a typical example.

Twelve were first ordered a few years before the war and to facilitate delivery K6212-6223, earmarked for the R.A.F., went instead to Australia as A4-1 to A4-12. Later deliveries made the series up to A4-48 and there it ended. Yet, after the war, the R.A.A.F. put no less than 450 Ansons into storage! The Ansons had been shipped over in quantity during the war as R.A.F. property, and when war ended, with a vast surplus of training aircraft, the R.A.A.F. took them over. In the same way, it was not an economic proposition to ship back to the U.K. some 130 Spitfire F.8s used by Nos. 54, 528 and 529 Squadrons R.A.F. serving in the South Pacific Area. These too, were handed over to the R.A.A.F.

With the end of the war came re-organisation, Lease/Lend equipment to be returned or settlement made for aircraft retained. The disposal of R.A.F. machines in Australia as well as surplus R.A.A.F. aircraft to be arranged, and impressed aircraft to be released. Some 2,500 aircraft up to the end of 1947 were put into long-term storage. The importance of a serial number, as a means of identifying an airframe throughout can perhaps now be appreciated.

Since the war, Australia has played an important part in Imperial defence. In Korea, No. 77 Squadron of the R.A.A.F. fought with Meteor F8s, which by coincidence bore the type number A77.

Following a decision taken at a meeting of Commonwealth Prime Ministers, No. 78 fighter wing of the R.A.A.F. was stationed in the Middle East. Based in Cyprus, the unit flew Vampire FB9s, which retained their original R.A.F. numbers.

In Malaya, the R.A.A.F. operated their Lincoln B30s (A73) against the Malayan bandits.

Type numbers now include pilotless research and target aircraft such as the A92 Jindivik and A93 Pika. With the recent purchase from Canada of a D.H.C. Beaver the series reaches A95. Australia is nearing the century. This provokes an unanswerable question—What then?

(Next month: Canada)



A Bell X-1A dropping away from the "mother" B-29A Superfortress high over the Mojave Desert.

# One Engine Over the Jungle

PHILIPPINE Airlines are concentrating their attention on to the internal communications problems of the hundreds of islands of the 900-mile-long archipelago.

These islands are moist, warm, fertile, healthy; they are leading producers of sugar, hemp, tobacco, and coffee. The forests yield dyewoods, hard timber, and medicinal herbs; the mines coal, iron, copper, gold and lead. Land transport for the exploitation of these riches is rudimentary and the sea and the air will therefore play the leading parts in President Magsaysay's drive to open up the economic wealth of the country and to bring at the same time the amenities of civilisation to the "barrios", the village communities.

Airfield development is at once the priority and the present bottleneck. There are only three airports able to take the Convair and about thirty the Dakota. These two types have nevertheless provided already a sound skeleton for the country's main needs. Further airline penetration towards the smallest islands, the remotest lumber camps, the most isolated pineapple plantations seemed at first to be attainable only through a costly helicopter operation. But in the course of reviewing alternatives de Havilland Canada's Otter was examined and found to be, on paper, a surprisingly good answer. Top P.A.L. operational and engineering executives flew to Toronto last Christmas Day and established with an Otter in the air that it was indeed so, and today P.A.L.'s first three aircraft are in service.

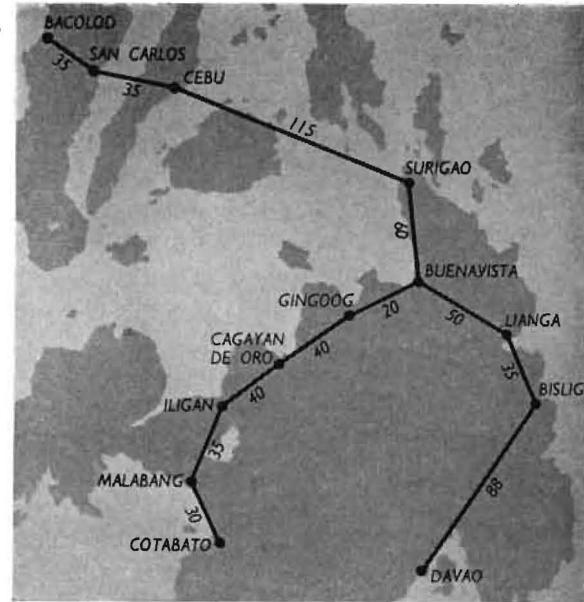
As the map accompanying this article shows, initial development of the Otter operation has been in the south, on the Island of Mindanao. A circular route is flown from the Convair terminal of Cagayan de Oro—a runway hewn by Philippine Army engineers out of a green undulating plateau alongside a cattle valley—to Davao City, a fast-growing port lying on the south coast under the shadow of volcanic Mount Apo. One Otter is based at each of these terminals. There is a permanent captain for each aircraft, and a reserve captain is provided on rotation from the DC-3 crews. The Cagayan-based Otter flies to Gingoog and Buenavista daily; three times a week

the flight is operated twice daily. On three other days the Otter turns west and flies to Iligan, Malabang and Cotabato. The Davao Otter ties in with these schedules, linking Davao to Bislig, Lianga, and Buenavista, extending every other day to Surigao, on the northern tip of the island. There it connects with the third Otter, which is based at Cebu, second city of the Philippines, and which operates four times weekly to San Carlos and Bacolod, and three times weekly on the 100-mile sea crossing to Surigao.

Thus an Otter captain may make as many as fifteen flights a day, and of twelve stages so far served only three are longer than forty miles. This is a practical application of de Havilland Canada's belief that the Otter can show superior economy to present-day helicopters over stages greater than fifteen miles.

While Philippine Airlines regard this operation as a public service and were prepared for operating losses during the introductory period—albeit with the indirect benefit of increased traffic fed to the DC-3 routes—the fact is that, even at the modest fare basis chosen to encourage traffic from the start, the Otter operation is breaking "better than ever". Good load factors have been quickly built up and, on the flights which provided the brief experience on which these notes are based, every stage carried its full complement of eleven passengers, except one where four passengers and a compensating load of freight was carried.

At present, long before the full potential of the Otter operation has been developed, the utilisation rate is better than four hours per day. This is a substantial figure when it is remembered that it is built up in a series of very short flights, with passengers and cargo changing at every stop. All services operate with full tanks (216 U.S. gallons) from base, which is sufficient for the return flight on all routes, without penalising the



This map shows the area served by the Otters. Stage distances are shown in miles.

capacity payload of eleven passengers and two or three hundred kilos of cargo. Thus no outstation refuelling facilities are required and the station facilities at most of the jungle strips comprise no more than a "basha" (thatched) hut with an ancient typewriter, a file of manifests, and a local general-storekeeper or gas-station operator acting as traffic officer, loader and ground hostess.

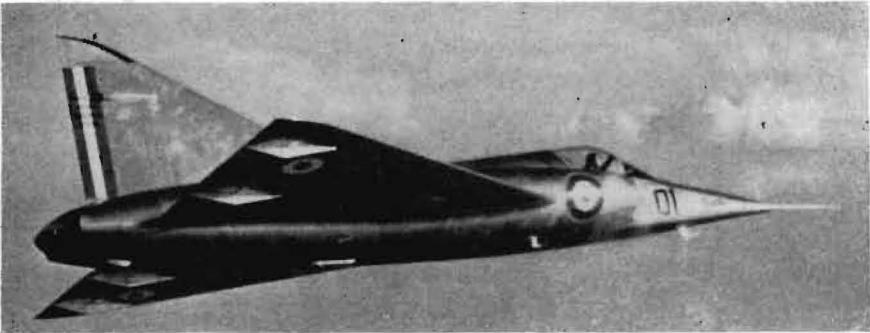
The strips provided for the Otter have in most cases been recently cleared specifically for this operation and would be unusable by any other aeroplane of similar capabilities. Not only are they short and surrounded in many cases by jungle topping 200 feet, they have also been constructed by an enthusiastic but inexpert local population. Few are longer than 400 yards; usually they are as wide as a main road and have similar shelving shoulders.

The hazards of flying single-engine equipment over the jungle are not ignored, but the record of the Wasp engines in Beavers and Otters all over the world reduce this aspect to a modest level of importance. The pilots believe that the low stalling speed and extraordinary robustness of the Otter will take much of the peril out of a forced descent in the jungle tops.

The land journey from Gingoog to Buenavista takes five hours by car and costs forty pesos. The Otter takes twenty minutes and the fare is nine pesos. Bislig to Davao is a fifty-minute Otter flight. Alternatively you can spend a week on a coastal freighter which sails once a month. Lianga to Bislig is a twenty-minute Otter flight or a twenty-four-hour journey by outboard motorboat and truck for nine months of the year; during the monsoon there is no surface communication. North from Lianga, the flight to Buenavista takes thirty minutes by Otter and there is no land communication except a three-day foot-trail.

Otters connect at Buenavista to transfer passengers and cargo.





First air-to-air photograph of the "Mystère Delta", the Dassault M.D.550 lightweight single-seat fighter, suggests a cross between a Fairey FD.2 and a Javelin. Side air intakes lead to two Dassault M.D.30 axials (A-S Vipers—licence-built). Later a rocket unit may be installed.

## Did You Know...?

### Spot Aviation News from all over the World

**UNITED KINGDOM.** Foreign reports indicate the existence of a new Bristol turbojet, the Zeus.

● It now seems unlikely that unguided fin-stabilized rockets will be used for interception by the R.A.F. Official policy is to go directly from 30-mm. cannon to large air-to-air guided weapons.

● Lincoln RA716, previously with Theseus turboprops in the outer nacelles, has recently been used by the R.A.F. for research, powered by two Avons.

● Both the Napier Eland NE1.4 and the Rolls-Royce Tyne are to be tested on Lockheed's Constellation "hack" aircraft. It seems likely that the Eland will be installed first. The Lockheed Electra will certainly be offered at a later date with one of these engines as an alternative to the present Allison T-56.

● It has been officially hinted that the Rolls-Royce Conway by-pass engine may be used in the Handley Page Victor in place of the present Sapphires.

● To take care of any possible increase in all-up weight Vickers had projected the VC-7 with twin external nacelle tanks, before cancellation of the V-1000 project by the M.O.S.

● The final development of the Viscount in the early 1960's may differ in many respects from the present 800 series. It is likely to have turboprops of 2,500-3,000 h.p.

● The Britannia is to be tested with flap-blown devices.

● The rocket-jet Saro 53 is credited with a performance of Mach 2. American sources state that it will be fitted with a Gyron Junior of between 8,000 and 10,000-lb. thrust, and that the machine will be of delta configuration. The other mixed power plant interceptor, the Avro 720, although abandoned as far as production is concerned, will probably be completed for research purposes.

● Handley Page are to build a research aircraft with boundary layer control devices. Construction is likely to take place at Reading. For several years, Handley Page have been using a Vampire at Radlett

to test Dr. Lachmann's boundary layer theories.

**FRANCE.** The French Government has placed a pre-production order for ten SO-9050 Trident 2 fighters, the first of the batch are due off the line in 1956.

● First production deliveries of the SE-3130 Alouette 2 helicopters are due to be made in March 1956.

● Apparently only a wing unit has so far been ordered for the Breguet 940 Integral, although a later contract may cover a complete aeroplane.

● First production models of the Vautour are to be delivered in the spring. A total of 140 aircraft are on order.

● Air France will now receive 15 instead of 23 Breguet Deux Ponts transports. Production deliveries are to begin in 1957.

Twenty-five Cessna OE-2 are now being delivered to the U.S. Marine Corps as two-seat general utility A.O.P.s. The OE-2 is based on the four-seat Model 180, and is the successor of the L-19A and OE-1 Bird Dog. Most noticeable re-design is the tail assembly. The 265-h.p. Continental O-470-4 permits a 70 per cent METO cruise of 152 m.p.h. at 5,000 ft. for maximum weight of 2,650 lb.



● Both the Fouga CM.171 and the 172 are to be completed in the next few months and will be used to test the Turboméca Gabizo.

● It is now known that the SE-212 Durandal fighter will have an Atar 101-G-21 of 9,620-lb. thrust, and a rocket. The latter will be fitted in the second prototype. A performance of Mach 1.2 in level flight has recently been quoted for the SE-212.

● The design of a colonial police and night interdictor aircraft, the SO-7100 Dogue, has apparently been abandoned. The type was to have been a twin-engined monoplane with SNECMA 14X, Pratt and Whitney R-1340, or Alvis Leonides, and armament would have been two 30-mm. cannon plus bombs, and/or rockets.

● According to recent reports in the French press, there exists a new version of the Trident known as the Trident 3, with modified internal equipment.

**U.S.A.** J-54 is the military designation of the Westinghouse PD-33, 6,500-lb. thrust turbojet, two of which have been acquired by the U.S. Navy for testing.

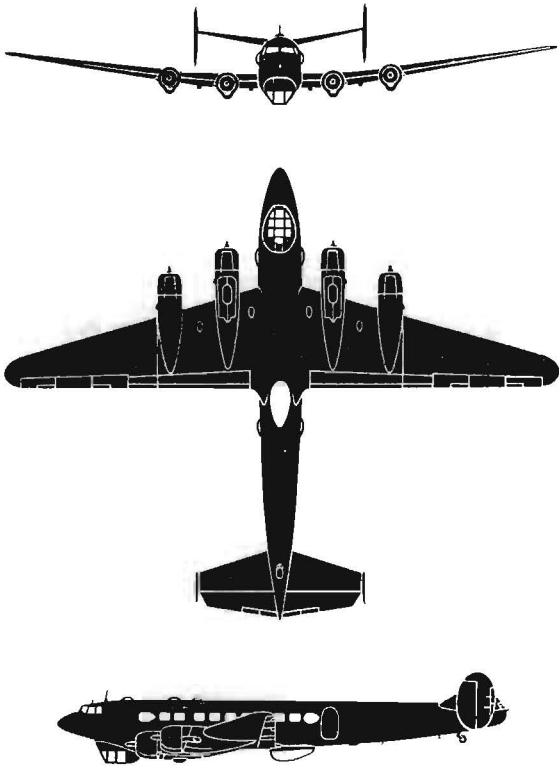
● The Republic F-105A fighter-bomber has a J-57-P-25 turbojet. Top speed of the production version (with J-75) is about Mach 1.5. The prototype F-105A flew on October 22nd.

● An enlarged version of the Boeing 707 with four Pratt and Whitney J-75 turbojets is being offered to airlines. This machine will be known as the "Intercontinental" and bears the manufacturer's number 320.

● Now in full production is the 150-h.p. Lycoming-powered Mooney Mark 20 with retractable undercarriage. It is a four seater.

● The Douglas/Emerson Honest John ground-to-ground rocket now in service, achieves a speed of Mach 1.5 using a powder rocket motor.

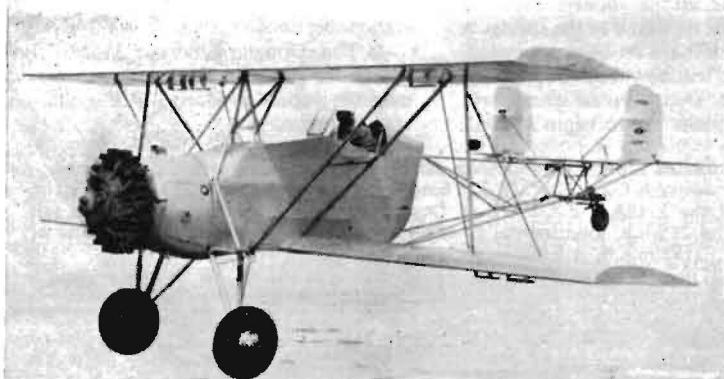
## SE-161 SAR LANGUEDOC



With its modification for Air-Sea Rescue work, the Languedoc takes on a new lease of life. The civil prototype of this aircraft, produced by Marcel Bloch, flew for the first time at Bordeaux in 1939, but it was not ready for service until 1942, and the first production model flew on 17th September 1945. Thereafter, sixty-two were delivered to Air France, a few others being sold to the Polish airline, Lot. Later, sixty were equipped for transport service with the French Air Force and also with the French Navy. The early models had four Gnome-Rhone 14N engines giving 1,020 h.p. The civil versions had Pratt and Whitney R-1830-92 Twin Wasps.

After an uncertain start, the aircraft gave useful service for several years before being superseded by later aircraft. A number have now been extensively modified for Air-Sea Rescue service. An observer's position has been installed in the forepart of the fuselage, and further aft a search radar is positioned in a transparent blister. There are also two dorsal radomes. In addition to its Air-Sea Rescue role, other Languedocs are currently in use as flying testbeds for a variety of piston and jet engines, and for other experimental work.

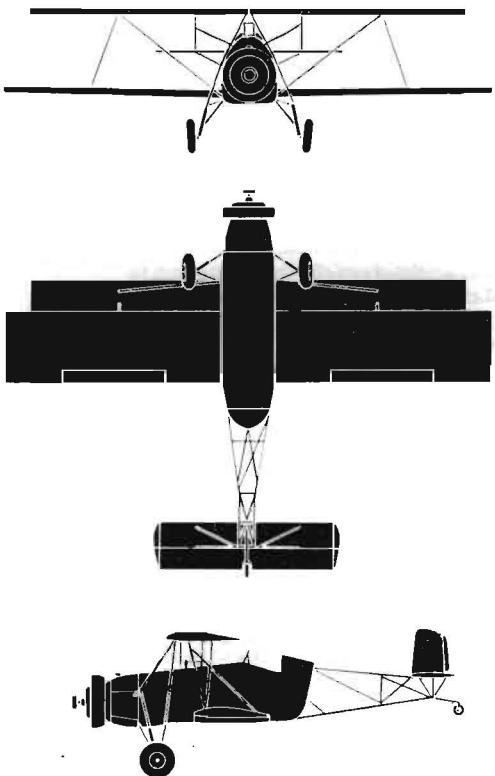
**Data:** SE-161 SAR Languedoc. Manufacturer: Marcel Bloch, Toulouse. Power: four Pratt and Whitney R-1830-92 Twin Wasps, 1,200 h.p. each. Weight: empty 27,890 lb., loaded 45,364 lb. Performance: maximum speed 273 m.p.h. at sea-level; cruising 233 m.p.h. at 7,500 ft.; maximum range 1,988 miles, normal range 1,670 miles. Dimensions: span 95 ft. 5 in.; length 79 ft. 7 in.; height 6 ft. 10 in.; wing area 1,197.8 sq. ft.



After several years preliminary study the Larson Agricultural biplane has been produced with the object of supplying a crop-duster which would be cheap, safe both from the point of view of flight characteristics as well as "crash survival" and which would be sufficiently rugged to stand up to the rough usage which the aircraft encounters in such work. The pilot is mounted behind both the engine and the load of 1,500 lb. of dusting material, while the top wing of the biplane gives him good turn-over protection. The power plant is a complete package of mounted oil tank, engine and propeller, including 220-h.p. Continental R-670 engine used in the P217 Stearman, large numbers of which are obtainable cheaply as war surplus. The Jacobs 225 and the Lycoming 225 are offered as alternatives. The fuselage is of welded steel tubing fabric covered aft of the cockpit in the production model. The sheet metal wings have four panels all equal size with no centre section. There are no bracing wires. Fabric covering is used aft of the rear spar to save weight. The undercarriage is a tripod, split type, with standard Ford automobile wheels and brakes.

**Data:** Manufacturer: Larson Aero Development, Buchannon Airfield, Concord, California. Power: 220-h.p. Continental R-670 or Jacobs 225, Lycoming 225. Accommodation: single-seat. Dimensions: span 33 ft. 10 in.; chord 5 ft.; wing area 315 sq. ft.; empty weight 1,700 lb.; maximum gross weight 3,600 lb.; maximum payload 1,500 lb.; wing loading 11.4 lb. per sq. ft.; fuel capacity 30 gallons ( $\frac{1}{2}$  hours).

## LARSON DUSTER D-I



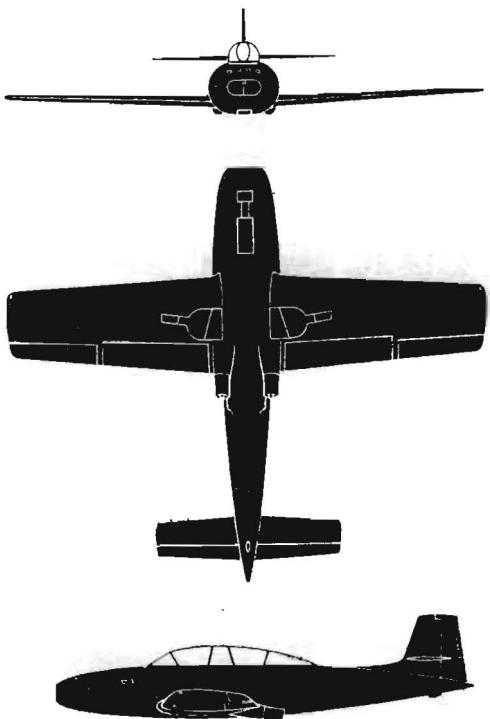
## HISPANO HA-200 R-I SAETA



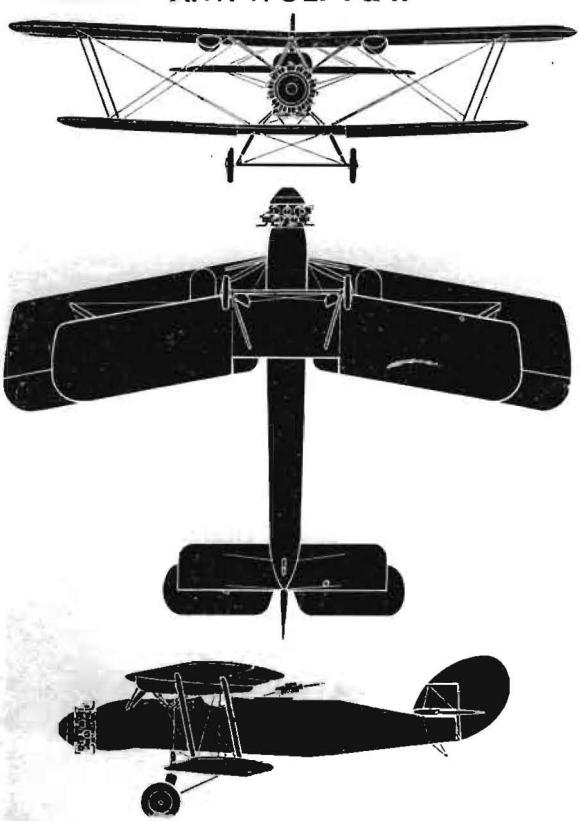
Formerly known as the Ha-120 R-I, the new HA-200 R-I, built in Spain by Hispano Aviacion, has been designed by Willy Messerschmitt. The West German Government has now awarded a development contract for the type, which flew for the first time on 16th August 1955. Wingtip fuel tanks may later be mounted.

**Salient features:** A tandem two-seat, the Ha-200 R-I has a long, single, strutted canopy and a divided nose intake feeding the Marboré 2 turbojets. The circular-section rear fuselage tapers away to a sharp point at the tail. Wings are square-cut with maximum taper on the trailing edge. The jet effluxes on either side protrude from the trailing edge and are canted downwards. The fin is equi-tapered with a blunt top, the tailplane being mounted at the fin-fin fillet intersection. Mainwheels fold inwards into the wing and the nosewheel backwards.

**Data:** Manufacturer: La Hispano Aviacion S.A., Seville, Spain. Power: two Turbomeca Marboré 2 turbojets of 880-lb. thrust each. Accommodation: two-seat. Dimensions: span 34 ft. 2 in.; length 29 ft. 1 in.; height 9 ft. 4 in. Weights: empty 3,188 lb.; gross weight 7,081 lb. Performance: maximum speed 440 m.p.h. at 29,500 ft.; sea-level rate of climb 2,680 ft./min.; service ceiling 40,000 ft.; range 1,060 miles.



## ARMSTRONG WHITWORTH A.W. WOLF I & II

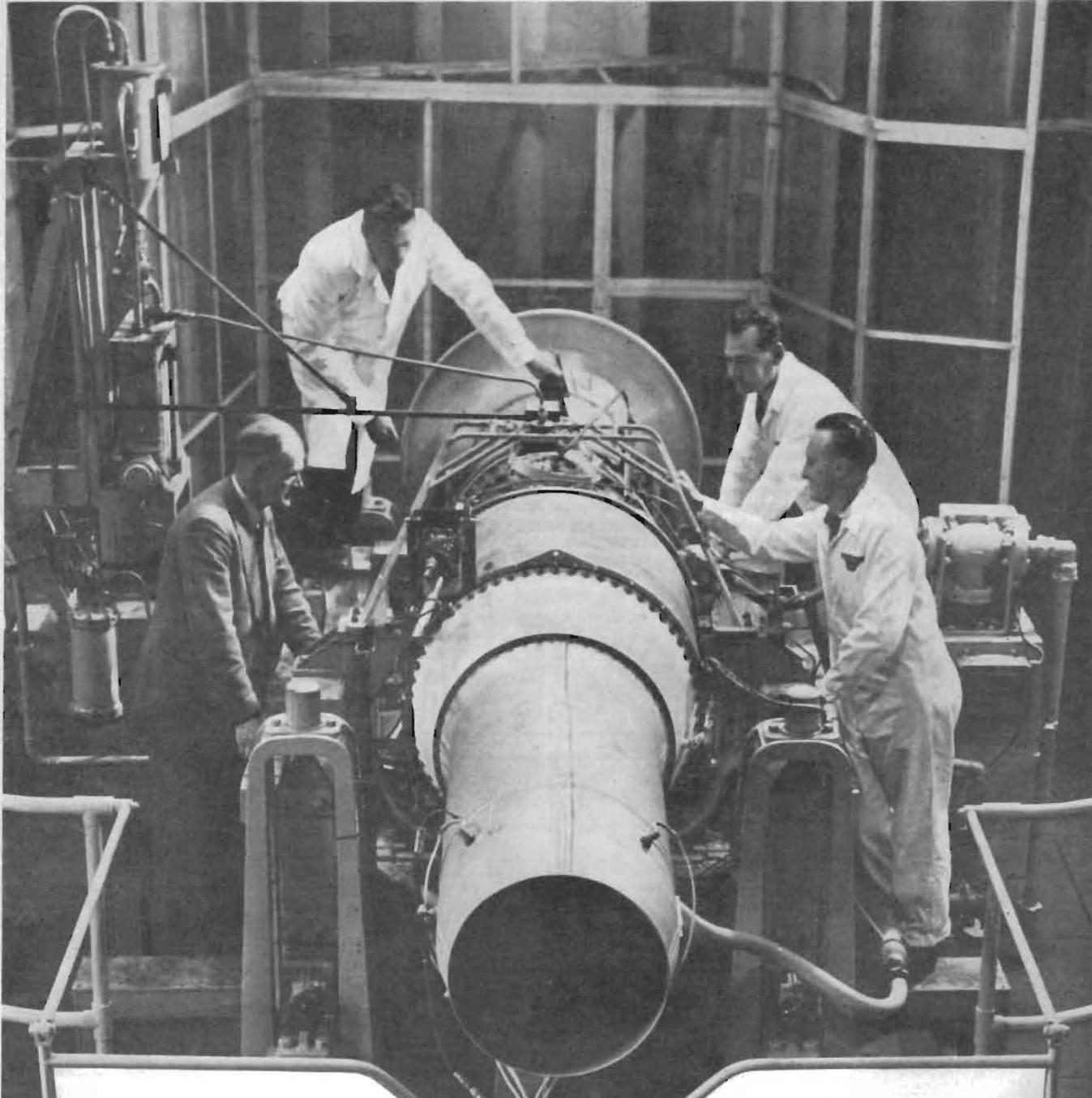


The Armstrong Whitworth Wolf was designed at Coventry in 1922 by Mr. J. Lloyd as a two-seat Corps Reconnaissance biplane. Five were built in 1923 and of these three were prototypes, J6921, '22 and '23, one of which is assumed to have become G-AAIY because Wolf No. 4 became G-EBHI and No. 5 became G-EBHJ.

The first flight date of No. 1 (J6921) was on 19th January 1923. Those of No. 2 and No. 3 are not known but Lloyds Register indicates that No. 4 (G-EBHI) first flew on 16th February 1923 and No. 5 (G-EBHJ) on 16th August 1923. Both were registered to Sir W. G. Armstrong Whitworth and were used for advanced Reserve Flying Training at the A.W. school at Whitley. The photograph of G-EBHJ shows the tandem-seat, dual-control Wolf I whereas the silhouette shows the projected Wolf II.

The Wolf II was planned in June 1923 and had provision for a Scarff-mounted rear-position .303-in. Lewis and a fixed, forward-firing .303-in. Vickers mounted on the port side of the fuselage. The second Wolf, J6922 and its successors had certain aerodynamic refinements.

**Data:** Manufacturer: Sir W. G. Armstrong Whitworth Aircraft Ltd., Coventry. Wolf Mk. I. Powerplant: one 350-h.p. Armstrong Siddeley Jaguar III unsupercharged radial. Dimensions: span 39 ft. 10 in.; length 31 ft. 7 in.; wing area 488 sq. ft. Gross weight 4,100 lb.; wing loading 8.4 lb./sq. ft.; power loading 11.7 lb./h.p. Max. speed 112 m.p.h.



## ORPHEUS

Design and development of the Orpheus lightweight turbojet has gone ahead at a remarkably rapid pace. Engine running began within twelve months of the start of detail design and six months later five engines had been built. An official

## TURBOJET

150 hour Type Test and a 25 hour Special Category flight clearance test have already been successfully completed. The Orpheus is specified for the Folland Gnat, the Fiat G 91, the Breguet Taon and the Mystere 26 light fighters.



Known as the "Flying Back Stagger" the Beechcraft D17 is still in use in various parts of the world as a cabin 4-5-seater. Illustrated is CF-EKA at Montreal Airport. (Photo: G. A. Fuller, Montreal)



Photographed at Blackbushe recently on a delivery flight to Pakistan by Fleetways, Inc., is this Cessna Model 310, AP-AGV. Note the novel colour scheme.



A United States Navy visitor to the United Kingdom is this Douglas R6D-1 (DC-6B and U.S.A.F. C-118A) of VR-22 Squadron. BuAer no. is 131572 and large "buzz" 572 on the rear fuselage.



Above: Rarely illustrated are aircraft of the R.Ceylon A.F.—in this case, CT-108 is a de Havilland Chipmunk T.Mk.21 trainer. Below: An Argentine-registered Focke-Wulf Fw 44J Stieglitz two-seat aerobatic biplane which was seen in England last summer.



Above: Photographed at Bovingdon recently, an unusual Douglas RB-26C-46-DT Invader (44-35762), first to be noted in the U.K. with an O-serial. Various bulges may be seen under the nose and rear fuselage. Below: Five ex-Swedish Junkers Ju 52/3m tri-motor transports are going to New Guinea (VH-BUU-'U'). VH-BUU is seen at Dusseldorf en route to Gibbes Sepik Airways.



## AIR PICTORIAL'S PHOTO-REVIEW



An American-owned (Knox Gelatine Co.) Grumman Super Widgeon, N41983, converted by the McKinnon-Hickman Co. at Portland, Oregon. Photograph shows clearly the three-blade airscrews. (Photo: G. A. Fuller, Montreal.)



Above: Believed to be one of the oldest Royal Navy Ansons still in service is NK201 (999-SZ). Below: Another old-timer, of which there are still a few flying, is this Australian-registered (VH-ABU) de Havilland D.H.80A Puss Moth.



# The Journal of a Roving Spotter



Photographed in berth 50 at Southampton recently, the Solent 4, G-AOBL, is now operated by Aquila Airways, who obtained it from Tasman Empire Airways. The name "Aotearoa" is retained.

Of the various aircraft which appeared on the ground and in the air at the Central Fighter Establishment, R.A.F. West Raynham, for the visit of General F. Raffaelli (Chief of Staff of the Italian Air Force), the Valiant (WP217) was the most interesting. Although it had no external features or markings to distinguish it from other production Valiants as serving with No. 138 Squadron at Wittering, this example was in fact from a new Valiant unit, No. 543 Squadron at Wyton.

No. 543 Squadron is, it seems, a re-formed unit, as was No. 138. Its previous history was as a photographic reconnaissance unit during World War II, flying Spitfires, and it may be no coincidence that it now shares R.A.F. Wyton with three Canberra P.R. squadrons—Nos. 58, 82 and 540. The fact that a version of the Valiant is to be used for long-range photographic reconnaissance duties was announced officially some time ago.

At the C.F.E., General Raffaelli, who arrived in one of the four Hastings C. Mk. 4 V.I.P. transports (WJ324), was shown something of the work in tactical and weapons evaluation being done by the Establishment. For the most part, the aircraft used are Hunters, and it was interesting to see that many of the C.F.E. Hunters had a distinguishing white band painted chordwise above each wing. One aircraft had a white fuselage top.

A Canberra B. Mk. 6 (WH921), built by Short Bros., was also present, together with Ansons and—a rarity—a Dominie. A visiting Sycamore H.R.14 (XJ363) demonstrated winch-rescue techniques, and was in the customary all-yellow rescue finish.

\* \* \*

Scottish Aviation have, I see, reported their intention of building fifteen Twin Pioneers, and have recently registered the first four, G-AOEN to G-AOER. According to my records, the company has recently completed its seventeenth single-engined Pioneer, more than seven years after the first flight of the prototype.

For the record, the Pioneers built to date are: XE512-XE515; G-ANRG; XG558-

XG563; XJ450 - XJ451; XJ465 - XJ466; G-AODZ and XK367; others are nearing completion. XJ466 and XK367 are ambulance versions, with loading hatches for stretchers in the fuselage side. Of the first batch mentioned, XE512 had originally been the Pioneer 1 VL515 and G-31-1, and then became the Pioneer 2 G-AKBF; XE514 was originally VL516 and became the Pioneer II 2 G-ANAZ. G-ANRG flew for a time as XH469.

\* \* \*

In *Air Pictorial* for September 1954 I noted the first flight dates and other pertinent information for the first four Javelin prototypes. A good deal of additional information on later examples is now to hand, and I list it herewith:

**WT836.** Fifth prototype, flown on 20th July 1954. Revised wing planform, and new "all-clear" cockpit canopy.

**XA544.** First production F.A.W. Mk. 1, flown on 22nd July 1954. Similar to fifth prototype.

**XA545.** Second production, flown on 17th March 1955. Fitted with "all-flying" tailplane.

**XD158.** Prototype F.A.W. Mk. 2, flown on 31st October 1955. Small changes in equipment from Mk. 1.

**XA629.** First F.A.W. Mk. 4, flown on 19th September 1955. Differs from Mk. 1 in having "all-flying" tailplane.

**XA560.** Prototype F.A.W. Mk. 7, flown on 30th September 1955.

\* \* \*

One of my illustrations this month shows an Auster A.O.P.9 for the Indian Air Force—bearing, it will be noted, a serial number similar in appearance to an R.A.F. serial, as are most of the serials carried by Indian Air Force aircraft.

A point which interests me in regard to this export Auster is that it has been given no distinctive mark number, whereas the export variants of many other current British aeroplanes are so distinguished. On reflection, there seems to be remarkably little consistency in the method of allocating "batched" mark numbers, although there

would seem to be little point in a deliberate attempt to confuse.

"Batched" mark numbers—i.e. numbers allocated in batches well ahead of existing "basic" production marks—arise for four classes of aeroplane: military adoptions of civil types; naval versions of R.A.F. types; Commonwealth production of British designs; and export variants. Deviations from consistency can be found in each class. Civil types in military guise, it seems, normally start at Mk. 10 (e.g. the Chipmunk); but the trainer Marathon was designated T.11. The Comet 2 for the R.A.F. is in this class, incidentally, but is known as C.MK.2. The first XK669 has now reappeared in Transport Command markings.

By and large, naval variants take the "twenties" numbers, but again some start at 20 (e.g. Hornet, Vampire, Venom), but others start at 21 (e.g. Balliol, Whirlwind). And the Sea Fury starts at F. Mk. 10!

Examples of Commonwealth production again show no consistency. Canada built the Lancaster 10, Lincoln 15, and Mosquitos 20 to 29; Australia started Mosquitos at Mk. 40, Vampires at Mk. 30, and Canberras at Mk. 20 (incidentally, the Canberra trainers to be built in Australia will presumably be T. Mk. 21).

So it is also with exports. While some aircraft—I have already mentioned the Auster 9—are exported without distinguishing mark numbers at all, others are designated, commencing variously at Mk. 50 or Mk. 51. Recent examples, to prove both points, are the Hunter F. Mk. 50, the export version of the Mk. 4 for Sweden, and the Provost and Pembroke series, commencing at Mk. 51. These are the unarmed Provost T.51 for Eire; the armed T.52 for Southern Rhodesia and the armed T.53 for Iraq and Burma; the Pembroke C.51 for Belgium; the C.52 for Sweden and the C.53 for Finland.

Vampires for Venezuela are designated F.B. Mk. 52; but Canberras for the same country are standard B. Mk. 2s; Venoms for Iraq are F.B. Mk. 50s, but Meteors have been supplied to Iraq, and many other countries, without a single export designation. I pass!

Auster's demonstration Aiglet Trainer (G-ANXC), which Ranald Porteous displayed at Farnborough last year, appeared in a new guise in November as the J/5R Alpine. This new permutation from Rearsby is a cross between the Autocar and the Aiglet Trainer, intended principally for tropical or high-altitude operations. The recipe is to take a standard Aiglet Trainer of the J/5L series and attach to it an Autocar wing with enlarged ailerons.

Fitted with a 145-h.p. Gipsy Major 10 engine, the Alpine—which has been planned for some time past but flew for the first time only on 12th November—is a full three-seater like the J/5L, but is better operated as a two-seater in the worst altitude/temperature conditions. An alternative version, with the less powerful Gipsy Major 1 engine and correspondingly poorer performance, is the J/5Q.

Another hybrid, examples of which are now flying, is the J/1N Autocrat. This is essentially a more powerful conversion (any Autocrat owner can buy a kit to change his aeroplane to a J/1N) having a 130-h.p. Gipsy Major 1. It is also externally distinguishable by having the enlarged fin and rudder of the Aiglet series, going hand-in-hand with the increased power.

In my Journal in *Air Pictorial* for March 1955 I explained how Auster designations for aircraft in the Auster 5 and the J/5 series were integrated. It is clear, from this new Autocrat, that J/1 designations are now integrated also. The following quick aid to designations in the three series may therefore be of use:

J/1	Autocrat. 3-st.; Cirrus Minor II.
J/1A	Autocrat. 4-st.; Cirrus Minor II.
J/1B	Aiglet. Long-span; 3/4-st.; Gipsy Major 1.
Auster 5	R.A.F. A.O.P.; some civil conversions; 3-st.; Lycoming O-290-3/I.
Auster 5A	4-st.; Lycoming O-290-3/I.
J/5	Autocrat in Australia. 3-st.; Gipsy Major 1.
J/5	Adventurer in Australia. 4-st.; Gipsy Major 1.



Still flying in America, this Moth Major, NC726A, was used by Pathé News to photograph Lindbergh's original "Spirit of St. Louis" at the start of its transatlantic crossing, and has been used again in the recent Lindbergh film. (Photograph courtesy of Levy-Ship.)

J/5A	Prototype of J/5 series (G-AJER). 3-st.; Gipsy Major 1.	J/5P	Autocar. 4-st.; Gipsy Major 10.
J/5B	Autocar. 4-st.; Gipsy Major 1.	J/5Q	Alpine. 3-st.; long span; Gipsy Major 1.
Auster 5C	One conversion. 3-st.; Gipsy Major (Auster 3).	J/5R	Alpine. 3-st.; long span; Gipsy Major 10.
Auster 5D	Two conversions. 3-st.; Gipsy Major 1; enlarged fin and rudder.		*
J/5E	Autocar. Short span; 4-st.; Cirrus Major 3.	J/5F	*
J/5F	Aiglet Trainer. Short span; 2/3-st.; Gipsy Major 1.	J/5G	*
J/5G	Super Autocar. 4-st.; Cirrus Major 3.	J/5H	*
J/5H	Super Autocar. 4-st.; Cirrus Major 2.	J/5J	*
J/5J	No information.	J/5K	*
J/5K	Aiglet Trainer. Short span; 2/3-st.; Cirrus Major 3.	J/5L	*
J/5L	Aiglet Trainer. Short span; 2/3-st.; Gipsy Major 10.	Auster 5M	*
Auster 5M	Advertising special. Neon lights under wings; Lycoming O-290-3.	J/1N	*
J/1N	Autocrat conversions. 3-st.; Gipsy Major 1; enlarged fin and rudder.	J/5O	*
J/5O	Designation not used.		*



(Above left) At first glance this Auster A.O.P. 9 might be thought to be in R.A.F. markings. Actually the roundels are in the saffron, white and green of the Indian Air Force. (Below) An old friend in new guise, G-ANXC was flown during November as a J-5R Alpine with a long-span wing as shown. It is better known as the Aiglet demonstrator.



Writing with a freedom of expression which the Editor of this journal would never allow me to emulate, *American Aviation Daily* recently came up with this gem: "The U.S.A.F. will obviously continue to develop its knack of knocking the Nike in an effort to put a nick in Army missile money".

Reason for this comment was a recent slanging match between the U.S. Army, which has been expending large sums of money in establishing Nike ground-to-air missile sites around many "strategic" cities in the U.S.A., and the U.S.A.F., which considers it should have that money to develop and produce air-to-air missiles, and ground-to-air missiles of greater range and performance than the Nike, such as the Boeing IM-69 Bomarc.

Kindling the controversy was a recent exercise in which, it seems, Nike didn't show up too well. To give a single example, four Nikes were fired at a Martin TM-61 Matador ground-to-ground missile flying at a speed and altitude stated to be "unrepresentative" of what could be expected in a future war. The first Nike missed the target and was exploded deliberately to prevent it causing damage when it fell back; the second Nike homed on the explosion of the first; the third suffered a power failure; and the fourth also missed the Matador.

At Brough recently the second production Beverley, bearing its temporary civil registration G-AOEK as I noted last month, was in company with the fourth machine, XB262, which has now departed for winterisation trials and demonstration flights in Canada.

This same Beverley, XB262, went to Idris for tropicalisation trials earlier in 1955, and the present year should see the first squadron—No. 47—operational with the type.

# Paris Discovery

DURING a recent visit to Paris, after much persistent research, I discovered France's secret hoard of historical aircraft. This search passed me through the French Air Ministry, who provided an interpreter and photos and information on the SIPA 200 for good measure.

Next door to the Air Ministry in the old Air Museum building was a library of photos and publications in all languages which was very complete excepting World War II aircraft. In residence with his two charming female assistants was the celebrated Charles Dollfus, who recently made a free balloon ascent at Hinckley in Leicestershire—a unique chance to spot an unusual French aircraft. Monsieur Dollfus furnished me with a special pass to visit La Musée de l'Air at Chalet-Meudon on the outskirts of Paris.

The following day I arrived at what appeared to be a research establishment—a large wind tunnel was visible amongst the trees. I was escorted to a hangar set apart from the rest where I saw a spectacle that made me gasp—sixty-nine models in all, on average better than our Science or War Museum exhibits, and going back to Cazley and Henson in 1843. Most are in 1/18th scale.

## Stored Haphazardly

Aircraft exhibits are just stored haphazardly until an official building is found. Many parts and accessories are stored there too, including 395 engines of all types, including Russian, French, British, American, German, Italian and Czechoslovakian. Electric, diesel, petrol, steam, compressed air, ram- and turbojet. Also, 172 propellers of all types hung around the hangar. The aircraft were mostly in airworthy condition, but with wooden "tyres"—the rubber had presumably perished.

1921—Morane Saulnier-Aerobatic A/C, F-ABAD, blue-white colour; 1910—Fuselage R.E.P. Mono.; 1915—Caudron G.IV; 1918—Fokker D.VII (ALB), 6796/18; 1922—Bleriot-Spad, Jean Casare's plane; 1917—Breguet 14 A2, No. 2016; 1884—Reward Krebs Dirigible Nacelle; 1913—Deperdussin Gordon Bennett Racer; 1918—Lepere SC42133; 1927-8—Breguet 19GR, "Tour Du Monde"; 1936—1-15 Biplane, Spanish Civil War; 1920—Junkers J66, poor condition; Spad F-350, poor, in bits; R.E.8, in bits; LGV, in bits; 1910—REP, all scarlet; 1947—Leduc 010, recent acquisition; 1915—Nieuport XI, "Bebe", N976; 1936—OE Hmichev, No. 6, Flying Bedstead, experimental helicopter; 1928—Cirvia C VIII, G-EBYY; 1944—YAK 3; 1910—Original Fabre Hydravion first seaplane; Sud-Ouest SO1110, Ariel II, F-WFRQ; 1913—Caudron G3; 1935—Caudron Regnier 714R, Deutsch Cup Winner; 1942—FW190 A-8, French markings NC900; 1913—Morane, "H"; 1896—Chanute Glider; 1911—Belgian Maurice Farman; 1909—Bleriot XI; 1917—D.H.9, F125B; Bleriot XI; 1909—Antoinette Levasseur, this and the Bleriot were in pieces; 1910—Wright Bipe; 1944—Heinkel 162, French markings; 1910—Nieuport 28 C.V. Racer; 1919—Nieuport T29; Donnet leve que Biplane-Seaplane V-1, in bits, poor condition; 1933—Potez 53, Deutsch Cup Winner; 1930—Breguet G.R., first Paris-New York; 1924—Bernard 191 Oiseau Canari; 1893—Lilenthal Glider; 1917-18—PFALZ D 111; 1908—Santos Dumont Demoiselle; 1942-43—Focke Achgelis Rotor-Kite, crated; 1940—Demoitine 52D; 1918—Bleriot XI, two-seater; 1908—Voisin Bipe; 1917—Spad XIII S-152; 1911—Deper-dussin Mono.; 1942—Spitfire IX BS464; Ile de France fuselage, F-HMFU; Stratosphere balloon nacelle, Ossoauiaachim.

I saw the lower ball turret and wheel of a B-17—presumably shot down over France—and several of Monsieur Dollfus's balloons. The engineer who had made a Betty-Baka model in the collection was restoring an ancient CO<sub>2</sub> motor found on a local farmstead.

I am sure Monsieur Dollfus would be only too pleased to show any keen visitors this treasure trove of aeronautics.—A. G. Parkinson, 37 Glanville Road, Bromley, Kent.

## New Test Centre?

The dry salt lakes of Central Australia may be developed as test centres for supersonic aircraft. The idea has been discussed at a Commonwealth Aeronautical Advisory Council meeting in Melbourne.

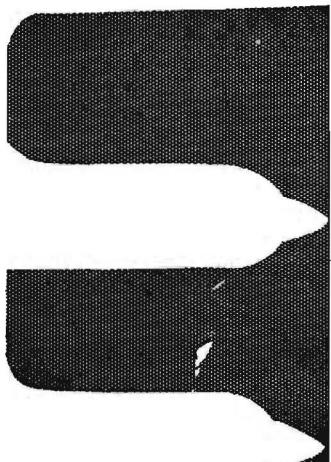
# 25,389,246 miles

were flown by BEA aircraft during the year ending October 31st, 1955, in serving 67 airports in Great Britain, Europe and North Africa. In the course of these operations BEA carried 2,128,617 passengers — 330,013 more than in the previous year.

## fly BEA IN EUROPE'S FINEST AIRFLEET



BRITISH  
EUROPEAN  
AIRWAYS



# Aircraft of the 1914-18 War

## The F.E. 2b

By J. M. BRUCE

COMPANION Fokker-beater to the D.H.2 was the Royal Aircraft Factory F.E.2b. Like the D.H.2, it was not specifically designed as a counter-measure to the Fokker monoplane. In fact, the basic design of the F.E. had been completed in August 1913 under the designation F.E.2a. It was not, however, derived from either of the two different aircraft which had been built under the name F.E.2; it shared with them only the pusher configuration.

The F.E.2a was not ordered until August 1914, when a production batch of twelve machines was put in hand. The aircraft was a three-bay pusher biplane powered by a 100-h.p. Green engine. The outer portions of the wings were identical to the mainplanes of the B.E.2c, as it was hoped that this interchangeability of components would facilitate maintenance in the field. The F.E.2a had the cumbersome oleo undercarriage which had been developed at Farnborough.

The first F.E.2a appeared in January 1915, but on test the Green engine proved to be unsatisfactory and the design was modified to have the 120-h.p. Beardmore engine. With the new power unit the aircraft was renamed F.E.2b, and the first example was flying in March 1915. There can be little doubt that the twelve F.E.2a's were converted to F.E.2b's, but the last of that small batch was not delivered until November 1915. The F.E.2b had no air-brake.

The first F.E.2b to be delivered to the R.F.C. had been handed over in May 1915 and, flown by Captain L. A. Strange, had joined No. 6 Squadron in France on the 20th of that month. By the end of September 1915, No. 6 Squadron had four F.E.2b's.

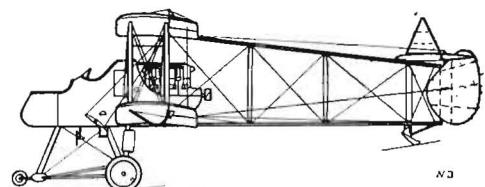
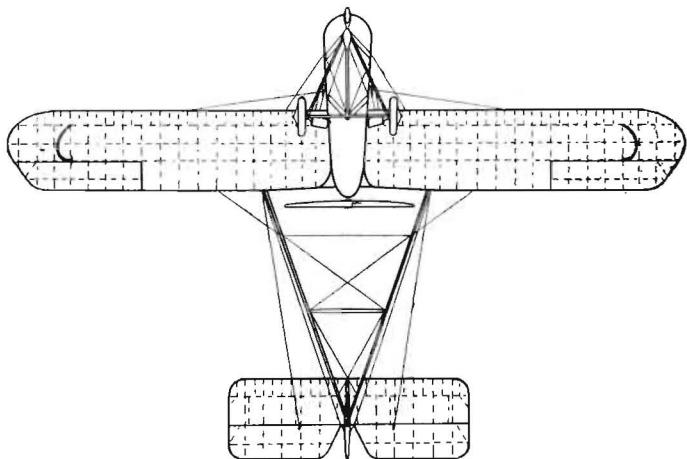
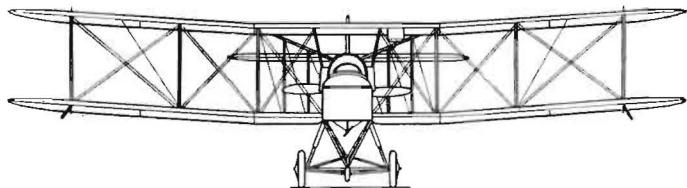
Fortunately, the type had been put into production with several contractors, and on 23rd January 1916, No. 20 Squadron, R.F.C., was able to go to France equipped throughout with F.E.2b's. Squadrons Nos. 25, 23 and 22 followed, in that order.

The F.E.s made reconnaissance flights and flew as escorts to the B.E.s, which were suffering from the attacks of the Fokkers. The F.E.s' gunners' wide field of fire made them effective counter-weapons against the Fokker menace.

Throughout the summer of 1916, above the carnage which was the Somme, the F.E.s flew and fought staunchly. By that time the more powerful 160-h.p. Beardmore engine had become available and was fitted to the F.E.2b in order to improve the performance. But the increased power and other minor refinements could not prevent the F.E.'s eclipse in the autumn of 1916, when the enemy's fast new scouts began to appear in numbers.

In November 1916 No. 18 Squadron began to make night-bombing attacks with its F.E.2b's, a change of duty which was to prove prophetic, for the F.E.2b remained in service as a night bomber until the Armistice.

A Weir-built F.E.2b (A5548). Unusual are the red white and blue stripes round the nacelle's nose.



N.A.

One or two were experimentally fitted with balloon fenders; another had a small searchlight coupled to twin Lewis guns. Various engines were tested in F.E.2b airframes, and developments under the designations F.E.2c, F.E.2d and F.E.2h appeared. The F.E.2d went into production in its own right.

### DATA

**Manufacturers:** The Royal Aircraft Factory, Farnborough, Hants; Boulton and Paul, Ltd., Norwich; Richard Garrett & Sons, Leiston; Ransome, Sims & Jeffries, Ipswich; G. & J. Weir Ltd., Glasgow. Photograph left, of machine A5548, illustrates one of 150 built by G. & J. Weir Ltd.

**Power:** 120-h.p. and 160-h.p. Beardmore.

**Crew:** Two.

**Dimensions:** Span: 47 ft. 9 in. Length: 32 ft. 3 in. Height: 12 ft. 7½ in. Wing area: 494 sq. ft.

**Weights:** (120 h.p.) Empty: 1,993 lb. Loaded: 2,967 lb. (160 h.p.) Empty: 2,061 lb. Loaded: 3,037 lb.

**Performance:** (120 h.p.) Maximum speed at ground-level: 80.5 m.p.h.; at 10,000 ft.: 72 m.p.h. Climb to 10,000 ft.: 51 mins. 45 secs. Service ceiling: 9,000 ft. (160 h.p.) Maximum speed at ground-level: 91.5 m.p.h.; at 10,000 ft.: 76 m.p.h. Climb to 10,000 ft.: 39 mins. 44 secs. Service ceiling: 11,000 ft.

**Number built:** 1,939 F.E.2b's were built.

**Service use:** Western Front: R.F.C. Squadrons Nos. 6, 11, 16, 18, 20, 22, 23, 25, 38, 58, 83, 100, 101, 102, 148 and 149; "I" Flight of 54th Wing. Home Defence:

Squadrons Nos. 33, 36, 38, 51 and 58. Training: Squadrons Nos. 38, 188, 191, 192, 199 and 200; No. 10 Reserve Squadron; and many other training units.



# U.S. NAVY TO HAVE HELICOPTER SIMULATOR

A HELICOPTER flight simulator is to be installed at the U.S. Navy's flight school in Pensacola, Fla., where it will provide the equivalent of four hours of primary flight instruction. It has been designed by Bell Aircraft.

As the pilot moves the controls and "flies" the simulator, the scenery projected on a panoramic screen changes just as if he actually were in the air. The effect is so realistic that the student can "collide" with buildings on the ground and even get air sick.

The trainer, designated Model 2-FH-2, consists of three main components: a projector, a pilot's compartment and a computer.

The illusion of flight over, around and by terrain and objects has been accomplished by a technique called "point light source method".

This involves a small, extremely brilliant light projected through a coloured landscape built entirely in miniature in a six-foot square plastic transparency over the pilot's head.

The light is so bright that models of trees, houses, walls and fences stand out in vivid and authentic detail against a wide-view panoramic screen.

As the student pilot operates the helicopter controls and the terrain and sky move on the screen, he unconsciously becomes

convinced he and the helicopter actually are in flight.

The pilot's compartment, a replica of a Bell Model 47 helicopter, is equipped with dual controls. A standard instrument panel has the usual flight and engine instruments.

From a separate control panel the instructor can simulate a variety of changes in flight conditions.

Fuselage vibration is built in, as are engine and rotor noise, rough air and actual control forces. The instructor can vary the extent of these conditions and can even cause engine failure.

## Missile Submarine

THE *Barbero* is the second United States submarine to be converted to a guided missile submarine. It is scheduled to join the Atlantic Fleet next spring after extensive training in the Pacific.

Both the *Barbero* and the submarine *Tunny*, which was the first submarine to be converted to a missile carrier, are equipped to fire the Regulus missile.

This medium range missile extends the range and function of the submarine from one of a torpedo-firing craft to a vessel that is able to launch a missile that can travel many hundreds of miles from its point of departure.

## FAIREY MISSILE

A GUIDED missile is going into initial production in Britain and has already achieved "spectacular success". This was revealed by Sir Richard Fairey, Chairman of the Fairey Aviation Company at its annual meeting.

After reviewing the company's aircraft production, he said: "We have other irons in the fire. Our guided weapons division continues to grow. The whole subject is of such a secret nature that I am unable to give you any particulars".

## Aviation Exports

AN analysis prepared by the S.B.A.C. shows that the total value of aviation exports from the United Kingdom from 1946 to June 1955, was approximately £372 million. In 1954 the value amounted to £56.3 million compared with £65.5 million in 1953. In 1955, to the end of June, exports had reached £30 million.

A TANKER version of the Blackburn Beverley transport has been devised by Field Aviation Company Limited, of Oshawa, jointly with the English manufacturer, for the supply of Canadian Arctic outposts.

Arctic stations can only be supplied by sea for, at the most, one month a year. If the weather is bad that month such stations miss their whole year's supply. Another disadvantage in sea supply is that they would need to have twenty times the expensive storage capacity than if they were supplied by air.

The Beverley has the capacity to carry bulky items of spares and maintenance equipment in addition to fuel. These items do not have to be broken down to go in the Beverley, thus saving both manpower and time. The freight hold of the aircraft has a gross volume of 4,990 cu. ft. and a floor area of 505 sq. ft.

There is a separate tail compartment which can be heated for personnel transport with a gross volume of 2,070 cu. ft. and a floor area of 355 sq. ft.

This aircraft is capable of delivering up to 6,000 gallons of fuel per flight to each outpost. Alternatively it could take in 160 people or 25 tons of freight. Despite its size, the aircraft has as short a landing and take-off and as low a landing speed and as good landing control as a Dakota. Eight wheels enable it to use rough, unpaved landing fields of 3,000 feet in length. These wheels distribute its weight so that it requires a landing strip of comparatively low strength. All the aircraft's equipment has been tested for operation at temperatures down to -55 degrees Centigrade.

## R.A.A.F. APPOINTMENTS

THE Air Ministry has announced the following Royal Auxiliary Air Force appointments:

Squadron Leader D. H. M. Chandler to command No. 500 (County of Kent) Squadron, Royal Auxiliary Air Force, R.A.F. West Malling, Maidstone, Kent.

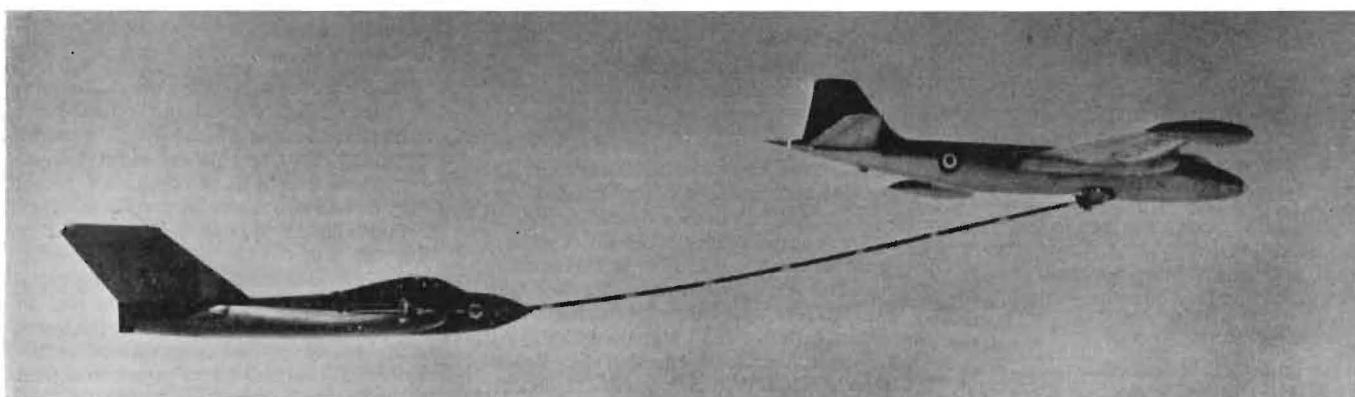
Squadron Leader H. J. E. Howe, a regular officer, to command No. 614 (County of Glamorgan) Squadron, Royal Auxiliary Air Force, R.A.F. Llandow, near Cowbridge, Glamorgan.

## ERRATUM

Registration G-AMOZ, quoted as belonging to a Viscount in Photo-Review in our December issue, is the registration number of an Auster J 5G. The correct Viscount registrations are G-AMOL and G-AMOH.



The prototype Dornier Do 27 was built at Getafe, Spain, by C.A.S.A. to the design of Officinas Tecnicas Dornier. This A.O.P./liaison monoplane, powered by a 225-h.p. Continental O-470-J, will be built in Western Germany for the new Luftwaffe.



Above: First photograph to show the high-speed, in-flight refuelling of a Gloster Javelin. The experimental tanker is an English Electric Canberra B. Mk. I (WH734).

Below: A new Cessna, the four-seat Model 172 is the first Cessna high-wing design to feature a nosewheel undercarriage. The maximum cruising speed is more than 120 m.p.h. on the power of the 145-h.p. Continental engine.



# New Books

SPACE TRAVEL

WEATHER

**"The Direction of War"**, by Air Vice-Marshal E. J. Kingston-McCloughry, C.B., C.B.E., D.S.O., D.F.C., R.A.F. (*Jonathan Cape*, 30 Bedford Square, London, W.C.1, 16s.).

THE origin of this book lay in the conviction that an overall review of our High Command and Political Direction for war was long overdue. This conviction is widely shared both in the Services and among lay students of war. It has been repeatedly expressed in memoranda and speeches emanating from the Air League of the British Empire. Nor is this need confined to preparation for armed conflict. As the author points out, "it is the lack of an adequate inter-allied Political Direction and High Command organisation for dealing with cold-war problems which is one of the greatest deficiencies in the present Allied military machine". And apart from organisation and pursuit of cold war, there is the further problem of discovering some deterrent to cold war of similar potency to nuclear weapons occupying a similar role in regard to a future armed conflict.

The slowness with which our defence organisation is being adapted to the tempo and conditions of modern war is a matter which justifies great anxiety, and one of the reasons for this is to be found in the lengthy description which Air Marshal Kingston-McCloughry gives of our present defence organisation. The multiplicity of departmental committees, joint committees, planning committees and "bureaux" is obviously the reason for the slow functioning of the machine. This book will have served a valuable purpose if it should lead to the growth of a demand for the streamlining of this unwieldy corpus of committees of all descriptions.

The book, of course, deals with the question of the possible integration of the three Services, but fortunately does not attempt to put forward any hard-and-fast scheme by which this could be brought about. The author would appear to share the view of those who believe that while integration must come, it must proceed naturally, and not be the subject of artificial forcing.

*The Direction of War* is an indispensable contribution to the study of this immensely important question.

**"Speeding into Space"**, by Marie Neurath (Max Parrish, 6s.).

THE problems of interplanetary flight simply explained. Written, illustrated and designed specifically for children, it is, nevertheless, a book the reviewer is glad to have on his shelf along with *Conquest of Space* and *Across the Space Frontier*.

**"Aircraft Today"**, edited by John W. R. Taylor (Jan Allan, Ltd., 96 pp., illustrated, 9s. 6d.).

THE author, well known to readers of *Air Pictorial*, suggests in his introduction that *Aircraft Today* is intended to fill a gap which exists between the weekly journals and the reference books. Mr. Taylor sets out to present the contemporary picture and does it very well.

However, the need for compromise, "something for everyone", introduces items which are not strictly "aircraft today". For example, there is a "Collector's Corner" which is out of character with the rest of this excellent book. On the other hand, an historical introduction by John Rawlings to four pages of modern R.A.F. squadron markings, in full colour, is permissible. These colour charts are one of the best reasons for spending 9s. 6d. on *Aircraft Today*, because they cannot be found in any other book.

Apart from articles by Mr. Taylor, the contributors' names will be familiar, Pat and John Stroud describing London Airport; James Hay Stevens explaining VTO and VTOL techniques; a delightful piece of prose on test flying by Harald J. Penrose; a discourse on "push-button warfare" by Eric Burgess; and others, including an important article, "The Future of Military Air Transport", by Air Marshal Sir Robert Saundby, K.B.E., C.B. Finally, the lighter touch is provided by "Chris" Wren's "Oddifications" of Russian military aircraft. (C.W.C.)

**"Supersonic Aircraft"**, by Roy Cross (Macdonald, London, 64 pp., illustrated, 9s. 6d.).

FROM the style and presentation, *Supersonic Aircraft* is clearly aimed at the younger teen-age market. The glossy red cover depicting the Fairey Delta 2 certainly catches the eye, and the all-too-few Roy Cross full-page colour drawings once again underline the fact that he is an aeronautical artist of consummate skill.

Mr. Cross has collated a mass of data on the aircraft which fall into the Mach 1.0 category. He has been painstaking, and for this reason it is a pity that the literary style does not match up to the remainder of the work. The prose is often stilted and, most important of all, there are patches where the explanation lacks clarity. For the younger generation this is a basic fault.

Nevertheless, *Supersonic Aircraft* is an interesting experiment and exceptional value for the money, even though there are faults in this first venture by Mr. Cross. (C.W.C.)

**"The Sky My Kingdom"**, by Hanna Reitsch (The Bodley Head, 28 Little Russell Street, London, W.C.1, 12s. 6d.).

HANNA REITSCH has well named her autobiography *The Sky My Kingdom*, for her love of flying dominated her whole life, so much so that she abandoned a career as a doctor to devote all her time and energies both to mastering the art of flying and to obtaining a thorough working knowledge of aircraft engineering. Through her keen enthusiasm and determination to succeed in both these fields, she soon became one of Germany's foremost air aces, and during the war, as a test pilot flew almost every German military aircraft, including the rocket Me 163 and the suicidal piloted V.1.

The style in which Hanna Reitsch has written this book is characteristic of her life. The personalities and events in her life fade in comparison with her intense love of flying, and the great exhilaration and joy she derived from a flight, whether in a glider or powered aircraft.

**"Cheshire, V.C."**, by Russell Braddon (Evans, 12s. 6d.).

THIS absorbing book on one of the outstanding figures of Bomber Command during the Second World War, forms an intriguing contrast, both in style and subject-matter, to Paul Brickhill's recent story of Douglas Bader (*Reach for the Sky*). Group Captain Leonard Cheshire, flew 100 sorties in the German war, and is the first to admit that luck played an enormous part in his survival, but in fact he had an unusual capacity for taking pains (he learnt to find his way round every inch of his aircraft blindfold) and a rare power to extract the best from his comrades.

Witnessing the explosion of the atom bomb on Nagasaki changed Cheshire's life. His post-war ventures, even from a sick-bed, for peace and to help his fellow men, fill a large part of this biography. Here Braddon seems puzzled by his subject, and less sure of his ground than in the straightforward descriptions of air battle. (Note for the next edition—page 18: the B-29 does not have Boeing engines).—G. D. H. L.

**"The Observer's Book of Weather"**, by Reginald M. Lester (Fredk. Warne, 1 Bedford Court, London, W.C.2, 5s.).

THIS is a fascinating little book, not merely for the budding airman, but for the general public, and particularly those who like to amuse themselves in studying cloud forms and sunsets, and deducing the weather prospects from them. This can be done with surprising accuracy by the amateur without instruments. A useful section of the book is devoted to interpreting the barometer, and explaining such mysteries as why a hot sun may be shining when the instrument is firmly indicating "Rain". The cloud photographs, and particularly the colour photographs of sunsets, are admirable.

# British Civil Register News

## NEW REGISTRATIONS

G-AODK	Agusta Bell 47G (O45)—Hordern-Richmond Ltd.
G-AOFU	Percival P.9 (P920)—E. W. Percival
G-AOFV	Hiller 360 Series UH.128 (748)—Air Service Training
G-AOFZ	Douglas C47 Dakota (9131)—Field Aircraft Services (Previously XY-ACP)
G-AOGA	Miles M.75 Aries I (75/1007)—Pasolds Ltd.
G-AOGB	D.H.82A Tiger Moth (T5373)—Fairey Aviation Co.
G-AOGC	D.H.114 Heron 2C (14094)—Shell Refining and Market- ing Co.
G-AOGD	Percival Proctor 3 (Z7214)—E. Crabtree
G-AOGE	Percival Proctor 3 (BV651)—E. Crabtree

## RESTORED TO REGISTER

G-AGNP	Avro 685 York C.1 (J218)—Skyways Ltd. (Previously OD-ABT, C. of A. renewed for one month)
G-AJVH	Fairey Swordfish (LS326)—Fairey Aviation Co.
G-AMGK	Avro 685 York C.1 (1356)—Skyways Ltd. (Previously OD-ABV)
G-AMKS	D.H.104 Dove 1B (O4290)—Fairey Aviation Co. (Previously ZS-DFJ)
G-ANRS	Vickers Viscount 732 (75)—B.O.A.C. (Previously OD-ACH)

## CANCELLATIONS

G-AHDD	D.H.82A Tiger Moth (86051)—Wiltshire School of Flying (Damaged beyond repair)
G-AHOR	Vickers Viking 1A (118)—Airwork Ltd. (SA—South Africa)
G-AHXS	Avro 652A Anson I (N9531) (WU)—Fairey Aviation Co.
G-AHYY	Short S25 Sandringham 5—Mentra Ltd. (ML838) (Broken up)
G-AHZE	Short S25 Sandringham 5—Mentra Ltd. (ML818) (Broken up)
G-AIVJ	Vickers Viking 1B (223)—B.E.A. (SA—Germany)
G-AJCE	Vickers Viking 1B (256)—Eagle Aircraft Services (SA—Sweden)
G-AJEA	Auster 5 J.1 Autocrat (2324)—Devonair Ltd. (Lost at sea)
G-AJTC	Miles M.57 Aerovan 4 (6414) (D)—Air "Ads" Ltd.
G-AKNT	Short S45 Solent 3 (NJ206)—Minister of Transport and Civil Aviation; (SA—U.S.A.)
G-ALBP	Miles M.38 Messenger 4A (RH376)—Wynne Bros. (SA as VH-WYN)
G-ALWU	D.H.82A Tiger Moth (T7227)—Not known. Temporarily unregistered; (SA—Australia)
G-ALXI	D.H.89A Rapide (HG705)—T. W. Williams (SA—Austria)
G-AMAP	Auster 5 (TJ351)—J. Green (SA—France)
G-AMNJ	Vickers Viking 1B (296)—B.E.A. (SA as D-CEDA)
G-AMXB	D.H.106 Comet 2 (O6024)—B.O.A.C. (Transferred to R.A.F.)
G-AMXF	D.H.106 Comet 2 (O6028)—B.O.A.C. (Transferred to R.A.F.)
G-ANGW	Auster 5 (MS980)—R. K. Dundas Ltd. (SA—Germany)
G-ANHP	Auster 4 (MT170)—R. K. Dundas Ltd. (SA as D-ELIT)
G-ANIX	D.H.82A Tiger Moth (T6390)—Mrs. O. J. Marmol (SA—Germany)
G-ANMK	D.H.82A Tiger Moth (N9370)—F. W. Haines Ltd. (SA—Australia)
G-ANRI	D.H.82A Tiger Moth (R5174)—N. D. Norman (SA—Germany)
G-ANTV	D.H.82A Tiger Moth (T6122)—Darlington & District Aero Club Ltd.; (SA—Germany)
G-ANXV	Vickers Viscount 747 (97)—Butler Air Transport Ltd. (SA as VH-BAT)
G-AOAH	D.G.82A Tiger Moth (EM749)—W. S. Shackleton Ltd. (SA—Australia)
G-AOEA	D.H.82A Tiger Moth (DE428)—W. A. Rollason Ltd. (SA as D-EFYN)
G-AOFT	Auster J5P Autocar (3193)—W. S. Shackleton Ltd. (SA—New Zealand)

## ALTERATIONS

G-AEYC	Percival Vega Gull (K59)—Wiltshire School of Flying
G-AGAK	Hirtenberg H.S.9A (001)—J. E. Coxon (Renewal of Validation of German C. of A.)
G-AGVG	Auster 5 J.1 Autocrat (1858)—T. G. Nightingale
G-AHEB	D.H.89A Rapide (6945)—Airlines (Jersey) Ltd.
G-AHPR	Vickers Viking 1B (164)—Not known. Temporarily unregistered
G-AIVI	Vickers Viking 1B (222)—First Air Trading Co.
G-AJBN	Vickers Viking 1B (240)—First Air Trading Co.
G-AJBU	Vickers Viking 1B (246)—Not known. Temporarily unregistered
G-AJXE	Airspeed A.S.65 Consul (5164)—B.K.S. Aviation Ltd.
G-AKCI	D.H.82A Tiger Moth (AI7-228)—Not known. Tem- porarily unregistered.
G-AKRV	Miles M.14A Hawk Tr. 3 (T9896)—D. Rickards
G-AKSS	D.H.104 Dove 1 (O4122)—Fairey Aviation Co.
G-AKVZ	Miles M.38 Messenger 4A (RH427)—Not known. Tem- porarily unregistered
G-ALFG	D.H.82A Tiger Moth (R5176)—North Downs Gliding Trust
G-ALIX	D.H.82A Tiger Moth (T6109)—W. S. Shackleton
G-ALTZ	Airspeed A.S.65 Consul (5134)—M. J. Conry
G-AMDN	Hiller 360 Series UH.12A (166)—Fison Airwork Ltd. (Renewal of Validation of U.S.A. C. of A.)
G-AMDO	Hiller 360 Series UH.12A (172)—Fison Airwork Ltd. (Renewal of Validation of U.S.A. C. of A.)
G-AMGY	Hiller 360 Series UH.12A (165)—Fison Airwork Ltd. (Renewal of Validation of U.S.A. C. of A.)
G-AMMY	Hiller 360 Series UH.12A (148)—Fison Airwork Ltd. (Renewal of Validation of U.S.A. C. of A.)
G-AMTO	D.H.82A Tiger Moth (T6229)—W. S. Shackleton Ltd.
G-ANFC	D.H.82A Tiger Moth (DE363)—Not known. Temporarily unregistered
G-ANGD	D.H.82A Tiger Moth (T7213)—Mrs. O. J. Marmol
G-ANLU	Auster 5 (TW448)—J. R. Cole and Partner
G-ANOAA	Hiller 360 Series UH.12A (170)—Fison Airwork Ltd. (Renewal of Validation of U.S.A. C. of A.)
G-ANOB	Hiller 360 Series UH.12A (120)—Fison Airwork Ltd. (Renewal of Validation of U.S.A. C. of A.)
G-ANOD	D.H.82A Tiger Moth (T6121)—G. E. C. Eddowes and Partners
G-ANQJ	D.H.82A Tiger Moth (EM814)—W. S. Shackleton Ltd.
G-ANPO	D.H.82A Tiger Moth (DE263)—Continental Aircraft Services
G-ANRD	D.H.82A Tiger Moth (R5237)—Not known. Temporarily unregistered
G-ANZC	Percival Proctor 4 (NP309)—A. E. Croucher
G-ANZM	Hiller 360 (106)—Fison Airwork Ltd.
G-AOAN	Avro 685 York C.1 (MW199)—Field Aircraft Services Ltd.

## AIRPORT NOTES—INTERESTING VISITORS

### London Airport

12/11	N45346	Skymaster—T.W.A.
15/11	ET-T-12	Dakota—T.W.A. freighter
17/11	I28433	R6D-12—U.S. Navy; serial on fin and under tailplane; VR-1 Squadron
19/11	10975	Dakota—R.C.A.F.
20/11	8616	C121A—M.A.T.S. (48-616A) (c/n. 2608)
21/11	OO-CTL	DC6-B—S.A.B.E.N.A.
	G-AOEK	Beverley—"Blackburn Universal" on nose; also Arabic transla- tion (ex-XB260); arrived from Middle East, in transit to Lyneham
22/11	VP-TBN	Viscount 702—British West Indian Overseas Airways (c/n. 81); left for Trinidad
23/11	N7104C	L1049G Super-Constellation—T.W.A., "Star of Blarney Castle"
	N88903	Skymaster—P.A.A.
24/11	G-ANWH	Super Freighter—Silver City Airways
26/11	G-ANRS	Viscount 732—B.E.A.C.; R.M.A., "George Bass" (see L.A.P notes, Dec. 1955 issue, under OD-ACH)
	92590	C.97A—U.S. Air Force (49-2590A)
1/12	G-AMYB	Dakota—Eagle Aviation Ltd.
	G-AMVC	Dakota—B.K.S. Air Transport Ltd.
2/12	N7105C	L1049G Super-Constellation—T.W.A., "Star of Chambord"
	VP969	Devon

### Croydon

7/11	G-ANMJ	Dove—ex-VP-YES
	G-AKIG	Dove—(c/n. 04071); Helliwells Ltd.
8/11	975	Dakota—R.C.A.F. Northolt
9/11	G-ANYV	Proctor IV—ex-NP308 (c/n. H692)
10/11	F-BHIO	Tiger Moth—ex-G-ANKZ, N6466 (c/n. 3803)
	G-AMFU	Dove—ex-VP-KDE (c/n. 04117); arrived for overhaul
	G-EFYN	Tiger Moth
	G-AOEL	Tiger Moth—ex-N9510; Continental Aircraft Services
11/11	G-ANHP	Auster V—ex-MT170
12/11	OO-DOL	Bonanza
14/11	G-ALGC	Rapide—ex-YI-ABF (c/n. 6906)

(Continued overleaf)



**The other reporter  
got the scoop!**



I should have flown B.O.A.C.

#### AIRPORT NOTES (Continued from previous page)

15/II	G-AJIP	Autocrat—(c/n. 2334)
17/II	G-AKYS	Dove—(c/n. 04135); David Brown & Sons Ltd.
18/II	F-BHIX	Tiger Moth—converted at Croydon; ex-G-ANGZ, DF213
21/II	G-AKHW	Gemini 1A—(c/n. 6524); Plymouth Airport Ltd.
24/II	G-AKIM	Messenger 2A—(c/n. 6724)
	G-AIYY	Rapide—ex-NR778
	G-ANCX	Tiger Moth—ex-T7229; arrived on lorry
25/II	D-EKUN	Tiger Moth—ex-G-AOEV, R4833
26/II	F-BHIQ	Tiger Moth—ex-G-ANJI, T6380
	F-BHIR	Tiger Moth—ex-G-ANML, T6062
	F-BHIS	Tiger Moth—ex-G-ANMN, T5606 (c/n. 83299)
27/II	G-AKEG	Gemini 1A (c/n. 6299); arrived for Air Couriers Ltd.
28/II	G-AMSN	Dakota—ex-KN673
	ZS-DFU	Dove—(c/n. 04290); flown in from Gatwick and converted to G-AMKS
3/II	TY170	Anson
	VP-KNS	Rapide—ex-G-AKOB, R9564 (c/n. 6493)
	G-ANZZ	Tiger Moth—ex-DE974 (c/n. 85834); from Fair Oaks for conversion
	D-EDOR	Tiger Moth

#### Bovingdon

14/II	PH624]	Anson C.12.5rs.2—with "greenhouse" windows as for Mk. I
15/II	51-025	SA-16A-GR—66 A.R.S., Manston
	WVD643 L	Meteor NF.11—151 Squadron, Leuchars
	51-071	SA-16A-GR—83 A.R.S., Spangdahlem, Germany
16/II	45-500	C-54—1401 Ops. Squadron, Andrews A.F. Base, U.S.A.
	42-72502	C-54D—1605 M.A.T.S., Lajes, Azores
	45-943	VC-47D—MAAG Belgium, Brussels
17/II	51-049	SA-16A-GR—582 A.R.S., Molesworth
	HN830	Oxford C.2
	WVB832 G-B	Shackleton MR.1—yellow spinners
	WA429 F	Vampire FB.5—cam
	43-15075	C-47—36 Maint. Squadron, Bitburg; blue-striped fin
	43-48908	C-47—7240 S. Squadron, Oslo; Allied Air Forces, Northern Europe
21/II	WR953 '4'	Shackleton MR.2—228 Squadron, St. Eval; blue-grey
25/II	50-701A	C-54G—7206 S. Squadron, Athens
	43-35385 (BC-385)	RB-26C—42 T.R. Squadron, Spangdahlem, Germany
26/II	42-72521	SC-54—67 A.R.S., Prestwick
	45-1057	C-47D—1631 Air Base Group, Prestwick
27/II	WA925 P	Meteor F.8—222 Squadron, Leuchars
28/II	44-35989 (BC-989)	RB-26C—42 T.A.C. Squadron, Spangdahlem, Germany
	42-23772	C-47—7167 A.T. Squadron, Rhein Main
29/II	43-49512	C-47—H.Q. 20 F.B. Wing, Wethersfield
30/II	51-047	SA-16A-GR—83 A.R.S., Spangdahlem, Germany
	42-92097	C-47—86 F.M.S., Bitburg, Germany; blue-striped fin
1/II	JAS016	Beechcraft B-50 Bonanza—Fleetways ferry crew
2/II	45-1067	VC-47D—1110 A.S. Group, Lowry A.F. Base, U.S.A.
	42-23966	VC-47—MAAG Netherlands, Valkenburg
3/II	51-2595	C-119C—780 T.C. Squadron, Eureux, France
	51-2595	T-33A-1-LO—Bitburg, Germany; buzz number TR-595
5/II	53-7906 '1'	L-20A—32 A.A. Brigade, Hendon; U.S. Army
	53-7923 '2'	L-20A—32 A.A. Brigade, Hendon; U.S. Army
6/II	G-ALDL	Hermes 4—Skyways, on freight charter to B.O.A.C. and in B.O.A.C. colours
	122207 PS 4	Martin P4M-1Q Mercator—U.S. Navy, Port Lyautey

#### Prestwick Airport

8/II	0-272456	Douglas 5G54—(E) new equipment for No. 67 A.R.S. U.S.A.F.
9/II	XK368	Prestwick Pioneer, C.C. Mk. I—R.A.F.; first flight
	KG455	Douglas Dakota—(E) R.C.A.F.; camouflaged; on delivery to European Division
11/II	CF-ILZ	Douglas Dakota—(W) ferry flight to Canada by Fleetways
12/II	KG441	Douglas Dakota—(E) R.C.A.F.; camouflaged; on delivery to European Division
13/II	N669 (c/n. 2044)	Lockheed Lodestar—(W) ferry flight to U.S.A.; ex-ZS-ASY, South African Airways
15/II	N7405	Vickers Viscount—(W) Capital Airlines; fourth delivery
	WX548	Lockheed P2V-5 Neptune—R.A.F. (squadron letters Z-C); painted in new Coastal Command grey
16/II	90936	Douglas R5D-4—(W) U.S. Navy; PROJECT MAGNET written in large letters on fin and had blisters at wing roots
21/II	N9903F	Curtiss G-46 Commando—(W) Riddle Airlines Inc., Miami; ferry flight
22/II	VP-TBN	Vickers Viscount 702—(W) B.W.I.A.; fourth delivery
23/II	XK369	Prestwick Pioneer, C.C. Mk. I—R.A.F.; first flight
24/II	G-AODV	De Havilland 104 Dove—(W) Shell Marketing & Refining Co.; delivery flight by Fleetways Inc.
	(c/n. 04461)	Vickers Viscount—(W) Capital Airlines; fifth delivery
26/II	N7406	Douglas Skymaster—(W) Loftleidir (Icelandic Airlines) on fuselage; aircraft chartered from Braathens (S.A.F.E.)
	LN-HAT	Beech Twin Bonanza—(E) delivery flight by Fleetways Inc. to Japan.
29/II	JA5016 (Japan)	VP-BAP (c/n. 14088) De Havilland Heron—(W) delivery flight by Fleetways Inc., to Bahamas Airways Ltd.
		Fairey Gannet, A.S.I.—Royal Australian Navy; NAVY on fuselage in large letters; squadron coding B424
2/II	XB262	Blackburn Beverley, C.I.—(W) R.A.F.; en route to Canada to conduct cold-weather tests; arctic red markings on tail assembly and wingtips
3/II	21426 }	Martin RB-57A Canberras—(E) U.S.A.F.
	21472 }	
	21466 }	

The symbol W or E shows that the aircraft has crossed the Atlantic and gives an indication whether the aircraft is arriving or leaving Britain: W being Westbound, E being Eastbound.

Consult your local B.O.A.C. Appointed Agent or any B.O.A.C. office.

BRITISH OVERSEAS AIRWAYS CORPORATION



# PHOTOS BY REQUEST

## FABIAN HERO

A two-seat, high-wing parasol monoplane, the Fabian Hero was built in Hungary during the early part of World War II. The Hero was designed by András Fabian as a conventional tandem-seat primary trainer, with excellent all-round view for the pupil (front seat) and the instructor.

A number of Fabian Hero trainers is believed to have survived the years and to be in use with the O.M.R.E. elementary training schools. The in-line motor is a 105-h.p. licence-built Hirth H.M.504A. No other details are available. The markings are those adopted when Hungary became an Axis co-belligerent.



## BRISTOL TYPE 91 BROWNIE

The Brownie was one of the entries in the Air Ministry's Two-seat Light Aeroplane Competition at Lympne in 1924. The Mark I illustrated, G-EBJK, was a metal version, with a 33-h.p. Bristol Cherub engine. The two Type 91 Mark IIs, G-EBJL and JM, had metal fuselages and wooden cantilever wings. Flown by Captain Cyril Uwins, then chief test pilot to the Bristol Aeroplane Company, the Mark I gained the second prize of £1,000 at Lympne, when its maximum speed was 65.19 m.p.h. and its lowest speed 38.73 m.p.h. It flew 512.5 miles in 10 hours 21 minutes.

The Mark I had a span of 30 ft. 7 in., the Mark II, 36 ft. 7 in. The empty weight was 500 lb. and the loaded weight 870 lb.



## BLACKBURN IRIS IV

This little-known version of the Iris open-sea reconnaissance flying-boat was experimentally fitted with three 800-h.p. Armstrong Siddeley Leopard engines in place of the usual Rolls-Royce Condors, the centre one being arranged as a pusher so that the slipstream flowed directly on to the tail-unit. The Mark IV, N185, is here seen at the Marine Aircraft Experimental Establishment at Felixstowe in 1933.

The main dimensions of the Iris series were: span 97 ft., length 70 ft., height 25 ft. 5½ in.



## VL PYÖRREMYRSKY

The supply of fighters by Germany to the Finnish Air Force in 1945 had to be suspended because of the worsening position of production for the *Luftwaffe*. To safeguard against this eventuality, the Finnish Air Force laid down a specification for a single-seat interceptor fighter which would be powered by the German 1,475-h.p. Daimler-Benz DB 605 AC 12-cylinder inverted-Vee in-line motor. The design was to use wooden construction in order to conserve vital metal supplies. The result was the trim-looking VL Pyörremyrsky (Whirlwind) which was first flown in 1945. Only one prototype was completed when the final truce with the Russians was concluded. Two cannon, one in each wing, were fitted. The Pyörremyrsky was designed and built by VL—Valtion Metallitehtaat, Lentokonetehdas—the State Metal Works, Aircraft Factories. The roundels are white, blue and white.



## GRAHAME-WHITE GANYMEDE

The F.IV Ganymede was designed as a long-range day bomber just before the Armistice in 1918 and was not produced in quantity. It was a twin-fuselage biplane with two 270-h.p. Sunbeam Maori engines driving tractor airscrews, and a third Maori at the rear of the central nacelle driving a pusher propeller. Originally 400-h.p. Liberty engines were to have been fitted.

The wing span was 89 ft. 3 in. and the length 49 ft. 9 in. With the Maoris the maximum speed at sea-level was 105 m.p.h. and the endurance 9 hours. The loaded weight was 16,000 lb.

By the nose of the Ganymede is the 20-ft.-span Grahame-White Bantam sporting biplane (80-h.p. Le Rhône).



# British Military Aircraft Code-Markings

By R. C. STURTIVANT

Readers who can fill some of the gaps inevitable in so detailed a history are invited to write direct to MR. R. C. STURTIVANT, 39 WESTWICK CRESCENT, BEAUCHIEF, SHEFFIELD 8. A complete list of additions sent in by readers of AIR PICTORIAL will be published at the end of this series.

Abingdon <b>T5</b>	Lyneham <b>N7</b>
Acaster Malbis <b>3T</b>	Manorbie <b>WA</b>
Acklington <b>7I</b>	Manston <b>FR</b>
Aldergrove <b>7X</b>	Melbourne <b>T6</b>
Ballykelly <b>8U</b>	Melton Mowbray <b>4L</b>
Banff <b>P6</b>	Mepal <b>LH</b>
Bardney <b>7U</b>	Merryfield <b>O8</b>
Bentwaters <b>YB</b>	Methel <b>D6</b>
Binbrook <b>CG</b>	Metheringham <b>YJ</b>
Blackbushe <b>N9</b>	Mildenhall <b>FT</b>
Bramcote <b>TQ</b>	Moreton-in-the-Marsh <b>WR</b>
Brawdy <b>2H</b>	Netheravon <b>YA</b>
Breighton <b>JQ</b>	North Killingholme <b>GG</b>
Broadwell <b>GX</b>	North Luffenham <b>AJ</b>
Castle Camps <b>WS</b>	Northolt <b>7G</b>
Chedburgh <b>VW</b>	Oakington <b>DC</b>
Chilbolton <b>IW</b>	Pembroke Dock <b>6Q</b>
Chivenor <b>5H</b>	Pershore <b>GC</b>
Church Fenton <b>MS</b>	Pocklington <b>K5</b>
Colerne <b>RQ</b>	Portreath <b>4T</b>
Coningsby <b>KI</b>	Predannack <b>LF</b>
Cortesmore <b>6V</b>	Prestwick <b>SC</b>
Dallachy <b>Y5</b>	Rivenhall <b>FW</b>
Desborough <b>TE</b>	Sandtoft <b>OC</b>
Doncaster <b>SP</b>	Shepherds Grove <b>H9</b>
Down Ampney <b>YO</b>	Silverstone <b>PI</b>
Dunsfold <b>JY</b>	Skellingthorpe <b>G4</b>
Duxford <b>GJ</b>	Snaith <b>5V</b>
Dyce <b>TU</b>	Spilsby <b>B6</b>
Earls Colne <b>RG</b>	Stoney Cross <b>X2</b>
East Kirby <b>HY</b>	Stornoway <b>WT</b>
Elsham Wolds <b>LM</b>	Sturges <b>OS</b>
Elvington <b>EE</b>	Sumburgh <b>VV</b>
Faldingworth <b>UN</b>	Swanton Morley <b>QI</b>
Feltwell <b>LC</b>	Swinderby <b>CH</b>
Filton <b>RR</b>	Syston <b>IA</b>
Finningley <b>JY</b>	Tain <b>K9</b>
Fiskerton <b>MC</b>	Talbenny <b>U2</b>
Full Sutton <b>HP</b>	Tarrant Rushton <b>KS</b>
Foulsham <b>2N</b>	Tempsford <b>6B</b>
Gibraltar <b>SD</b>	Thornaby <b>RJ</b>
Glanton <b>MX</b>	Tibenham <b>CS</b>
Gransden Lodge <b>HL</b>	Topcliffe <b>CP</b>
Gravely <b>WZ</b>	Tuddenham <b>CV</b>
Great Dunmow <b>AN</b>	Turnhouse <b>SU</b>
Grimsetter <b>JD</b>	Upper Heyford <b>IV</b>
Hemswell <b>W3</b>	Valley <b>IN</b>
Hendon <b>RU</b>	Waddington <b>B7</b>
Holmesley South <b>CC</b>	Warboys <b>E2</b>
Kemble <b>DI</b>	Waterbeach <b>N8</b>
Kenley <b>FC</b>	Westcott <b>E9</b>
Kirmington <b>QP</b>	Wickenby <b>E4</b>
Kirton-in-Lindsey <b>VE</b>	Wing <b>G8</b>
Leeming <b>WD</b>	Woodbridge <b>A9</b>
Little Staughton <b>CL</b>	Woodhall Spa <b>B8</b>
Llanbedr <b>DS</b>	Wrattling Common <b>3O</b>
Lossiemouth <b>YU</b>	Wymesswold <b>K8</b>
Ludford Magna <b>CY</b>	Wyton <b>B3</b>

Aclimatisation Flt. **BB** (Mosquito B.25).  
Air Delivery Letter Service Sqdn. **U7** (Anson I).  
Aircrew Examining Unit **R7** (unknown).  
203 A.F.S. **MX** (Spitfire LF.16E; Meteor F.4), **JH** (Spitfire LF.16E), **TO** (Martinet TT.1; Harvard T.2B), **UU** (Spitfire LF.16E).

RESERVE COMMAND "R" CODES	
<b>RAA</b>	500 Sqdn. (Mosquito T.3, NF.30; Oxford T.2; Harvard T.2B; Meteor F.3, T.7).
<b>RAB</b>	501 Sqdn. (Spitfire LF.16E; Harvard T.2B; Vampire F.1).
<b>RAC</b>	502 Sqdn. (Mosquito B.6; Oxford T.2; Spitfire F.22).
<b>RAD</b>	504 Sqdn. (Mosquito T.3, NF.30; Oxford T.2; Harvard T.2B; Spitfire F.22).
<b>RAG</b>	600 Sqdn. (Spitfire F.14, F.21, F.22; Harvard T.2B).
<b>RAH</b>	601 Sqdn. (Spitfire LF.16E; Harvard T.2B).
<b>RAI</b>	602 Sqdn. (Spitfire FR.14E, F.21; Harvard T.2B).
<b>RAJ</b>	603 Sqdn. (Spitfire LF.16E, F.22; Harvard T.2B).
<b>RAK</b>	604 Sqdn. (Spitfire LF.16E; Harvard T.2B).
<b>RAL</b>	605 Sqdn. (Mosquito NF.30; Vampire F.1; Harvard T.2B).
<b>RAN</b>	607 Sqdn. (Spitfire FR.14E, LF.16E, F.22; Harvard T.2B).
<b>RAO</b>	608 Sqdn. (Spitfire F.22; Mosquito NF.30; Oxford T.2; Harvard T.2B).
<b>RAP</b>	609 Sqdn. (Mosquito T.3, NF.30; Oxford T.2; Spitfire LF.16E; Harvard T.2B).
<b>RAQ</b>	610 Sqdn. (Spitfire FR.14E, F.22; Harvard T.2B).
<b>RAR</b>	611 Sqdn. (Spitfire FR.14E, F.22; Harvard T.2B).
<b>RAS</b>	612 Sqdn. (Spitfire FR.14E, LF.16E; Harvard T.2B).
<b>RAT</b>	613 Sqdn. (Spitfire FR.14E, F.22; Harvard T.2B; Vampire F.1).
<b>RAU</b>	614 Sqdn. (Spitfire LF.16E, F.22; Harvard T.2B).
<b>RAY</b>	615 Sqdn. (Spitfire FR.14E, F.21, F.22; Harvard T.2B).
<b>RAW</b>	616 Sqdn. (Mosquito T.3, NF.30; Oxford T.2; Harvard T.2B; Meteor F.3).
<b>RCA</b>	Reserve Command Comm. Flt. (Anson C.12.Srs.1, C.19.Srs.2; Spitfire LF.16E; Proctor C.3, C.4; Harvard T.2B).
<b>RCB</b>	12 R.F.S. (Tiger Moth T.2; Anson T.21).
<b>RCD</b>	12 R.F.S. (later <b>RCB</b> ) (Tiger Moth T.2; Anson T.21).
<b>RCE</b>	13 R.F.S. (Tiger Moth T.2; Anson T.1, T.21).
<b>RCF</b>	61 Gp. Comm. Flt. (Anson C.10, C.12.Srs.1, C.12.Srs.2, C.19.Srs.1; Proctor C.3; Dominie C.2; Auster 5).
<b>RCG</b>	62 Gp. Comm. Flt. (Proctor C.3).
<b>RCH</b>	63 Gp. Comm. Flt. (Anson C.10; Tiger Moth T.2; Auster 5).
<b>RCI</b>	64 Gp. Comm. Flt. (Anson C.10, C.12.Srs.1, C.12.Srs.2, C.19.Srs.1; Proctor C.4; Dominie C.4; Auster 5; Oxford C.2).
<b>RCJ</b>	66 Gp. Comm. Flt. (Auster 5; Anson C.10, C.19.Srs.2; Dominie C.2; Proctor C.2, C.3).
<b>RCK</b>	17 R.F.S. (Anson T.21; Spitfire LF.16E; Tiger Moth T.2; Beaufighter TT.10).
<b>RCL</b>	3 R.F.S. (Tiger Moth T.2; Anson T.21).
<b>RCM</b>	14 R.F.S. (Tiger Moth T.2; Anson T.1, T.21; Chipmunk T.10).
<b>RCN</b>	1 R.F.S. (Tiger Moth T.2; Anson T.21; Chipmunk T.10).
<b>RCO</b>	Unknown (Tiger Moth T.2).
<b>RCP</b>	6 R.F.S. (Tiger Moth T.2).
<b>RCQ</b>	7 R.F.S. (Tiger Moth T.2).
<b>RCR</b>	8 R.F.S. (Tiger Moth T.2; Anson T.21).
<b>RCS</b>	11 R.F.S. (Tiger Moth T.2; Anson T.21; Chipmunk T.10).
<b>RCT</b>	16 R.F.S. (Tiger Moth T.2).
<b>RCU</b>	18 R.F.S. (Tiger Moth T.2; Anson T.1, T.21; Chipmunk T.10).
<b>RCW</b>	22 R.F.S. (Tiger Moth T.2; Chipmunk T.10).
<b>RCX</b>	24 R.F.S. (Tiger Moth T.2; Chipmunk T.10).
<b>RCY</b>	42 R.F.S. (Tiger Moth T.2).
<b>RCZ</b>	5 R.F.S. (Tiger Moth T.2; Anson T.21).
<b>ROA</b>	9 R.F.S. (Tiger Moth T.2; Anson T.21).
<b>ROB</b>	661 Sqdn. (Auster AOP.5, AOP.6).
<b>ROC</b>	662 Sqdn. (Auster AOP.5, AOP.6).
<b>ROD</b>	663 Sqdn. (Auster AOP.5, AOP.6; Tiger Moth T.2).
<b>ROE</b>	664 Sqdn. (Auster AOP.5, AOP.6; Tiger Moth T.2).
<b>ROG</b>	666 Sqdn. (Auster AOP.5, AOP.6; Tiger Moth T.2).
<b>RSA</b>	23 R.F.S. (Tiger Moth T.2; Anson T.21).
<b>RSB</b>	10 R.F.S. (Tiger Moth T.2).
<b>RUA</b>	Aberdeen U.A.S. (Tiger Moth T.2).
<b>RUB</b>	Birmingham U.A.S. (Tiger Moth T.2).
<b>RUC</b>	Cambridge U.A.S. (Tiger Moth T.2; Chipmunk T.10).
<b>RUD</b>	Durham U.A.S. (Tiger Moth T.2).
<b>RUE</b>	Edinburgh U.A.S. (Tiger Moth T.2; Chipmunk T.10).
<b>RUG</b>	Glasgow U.A.S. (Tiger Moth T.2).
<b>RUL</b>	London U.A.S. (Tiger Moth T.2).
<b>RUM</b>	Manchester U.A.S. (Tiger Moth T.2; Chipmunk T.10).
<b>RUN</b>	Nottingham U.A.S. (Tiger Moth T.2).
<b>RUO</b>	Oxford U.A.S. (Tiger Moth T.2; Chipmunk T.10).
<b>RUQ</b>	Queens (Belfast) U.A.S. (Tiger Moth T.2).
<b>RUS</b>	St. Andrews U.A.S. (Tiger Moth T.2).
<b>RYU</b>	Leeds U.A.S. (Tiger Moth T.2; Chipmunk T.10).
<b>RUZ</b>	Southampton U.A.S. (Tiger Moth T.2).

(To be continued next month)

# Letters to

## the Editor

### MUSEUM PIECES

I HAVE just been looking through the October issue of *Air Pictorial* and think that the following facts, obtained during a recent two-weeks "spotting" in the London area, may be of interest. As most readers in the London area will probably know, the Battle of Britain Hurricane at Horse Guards' Parade was P2617 coded 14 not R (with a suggestion of US under the paint). This was probably the one seen by your correspondent at Croydon on 12th August. I gather 70 MU. were also responsible for the movement of Spits from Lyneham to Kenley. The R.A.F. personnel in charge of erection at Horse Guards' Parade told me that this particular Hurricane, in common with the other aircraft on show, was from the Air Historical Branch Museum, Stanmore, Middlesex. The Hurricane, however, arrived a few days later than the other machines as it was brought from R.A.F. Kenley where it was being used for the film *Reach for the Sky*.

On show in the Imperial War Museum on 9th September were the following: Spitfire 1: R6915 (ex-609 Sqdn.); Lancaster nose; serial unknown; Sopwith Camel 2F-1: N6812; R.E.8: F3556; Bristol F.2B Fighter: E2581; B.E.2C: 2699; Swordfish: NF370 Royal Navy.

The following list of aircraft held by the Science Museum may be of interest: At present in storage: Avro Type 504K; Bristol Bulldog; Cierva C.24: G-ABLM; Weir W-2: "W.2"; Cierva C-30a Rota; H.P. Gugnunc G-AACN; Supermarine Spitfire; Hawker Hurricane; D.H. Vampire; Curtiss Seagull; Japanese Baka Aircraft; Mignet Pou-du-Ciel: G-AEHM; German V-2 (A.4) Rocket.

At present on show: Lilienthal Glider (1895); Chanute glider (1900); Fokker Monoplane (1916); Vickers Vimy (Alcock & Brown) Supermarine S6B S.1595; V-1 Flying Bomb 442795; Roe Triplane (1909); J.A.P.-Harding-Bleriot type (1910); Antoinette Monoplane (1910); SE-5a (1916-17); Gipsy Moth (Amy Johnson) G-AAAH; Gloster E.28/39 W.4041/G; Focke-Achgelis FA.330 100509; Westland Hill Pterodactyl 1a J.8067.

I also have a note to the effect that the Science Museum had in 1951 a Sopwith Triplane N.5192.—David R. Sheppard, 27 Gilmour Road, Edinburgh, 9.

### FIRST SONIC BANG

ON page 139 of the May issue of *Air Pictorial* it was stated that on 6th September 1948 the de Havilland D.H.108 became the first aircraft in the world with a conventional aspirated engine to fly supersonically.

Surely the North American F-86A Sabre has a prior claim. I understand the proto-

type F-86 first flew in October 1947, and that several pilots, including a visiting Briton, dived the Sabre supersonically over California before September 1948, but that the earliest models of the Sabre required a longer dive to reach Mach 1.0 than did the D.H.108.—Norman Heap, 269 Beake Avenue, Radford, Coventry.

(*A North American XF-86 Sabre exceeded Mach 1.0 on 25th April 1948, some four months before the de Havilland D.H.108 exceeded Mach unity in a dive on 6th September 1948.—Ed.*)

### ELECTRO-GRAVITIES

IN the 1955 presidential address to the Institute of Transport, Mr. Peter Masefield referred to the possibilities of an electro-gravitic power unit, can you shed further light on this subject?—M. P. Johnson, 16 Gilchrist Avenue, Weston Estate, Macclesfield, Cheshire.

(*With regard to "electro-gravities": this is a theoretically possible new method of obtaining lift by interfering with the earth's gravitational field—rather in the manner proposed by H. G. Wells in his novel about a trip to the moon. Wells imagined a new material which would "screen" anything above it from the effect of gravity and thus send it flying off into space. "Electro-gravities" would similarly involve "screening" or otherwise deflecting the earth's gravitational field by electrical means so as to remove the vehicle's weight and provide it with "lift". Propulsion might be obtained in the same way.*

*Theoretical work in this field has been going on in various countries for some years. It will, however, obviously be a considerable time before any practical aviation application of "electro-gravitics" becomes possible.—Ed.*

### MYSTERY PACKET

ON page 353 of the November 1955 *Air Pictorial*, under the heading "London Airport Visitors" I noted with interest the arrival of the first civilian registered Fairchild C-82A Packet to be seen in the United Kingdom. It was stated that N2047A (22/9/55) was being ferried by an EL AL

### CIVILIAN PACKET

This photograph taken by reader R. W. Brown, shows the Israeli C-82A Packet at Blackbushe.



crew and that it was believed to be destined for the IDF/AF.

Readers may be interested to learn that N2047A (ex-45-57814) was at Blackbushe on 6th November after flying in from Tel-Aviv, the purpose being unknown. I was fortunate enough in being able to photograph this Packet (*see below*). Above, and roughly between the two inner portholes in the nose section is painted the word EXPERIMENTAL. Closer examination revealed that this Packet is ex-U.S. Army (not U.S.A.F.) and is a C-82A-65-FA.

It will be interesting to see whether or not this "experimental" Packet eventually appears in EL AL colours.

Also at Blackbushe on the same Sunday was AP-AGV, the Fleetways Inc. delivery flight Cessna Model 310 (*see "Photo-Review"*, p. 21) finished in a multi-colour scheme of red, yellow and black.—R. W. Brown (Member, London Society, Air-Britain), Yorkshire Cafe, 278 Northolt Road, South Harrow, Middlesex.

### SENTINELS VISIT U.K.

DURING July a number of U.S. Navy ships paid a courtesy visit to Portsmouth. I was fortunate enough to see U.S.S. *Siboney*, an escort carrier, and the battleship U.S.S. *Iowa* on which was stationed a Piasecki HUP-2 Retriever "UR-43" (BuAer. serial 129991).

What I have not seen mentioned to date is the fact that the U.S.S. *Siboney* carried a number of Grumman S2F-1 Sentinels (I saw half a dozen) as well as an HUP-2 and some Douglas AD Skyraiders. This must surely be the first time Sentinels have visited the United Kingdom?—R. Barrett, Red Hill School, East Sutton, Nr. Maidstone, Kent.

(*This is the first indication received by Air Pictorial that Sentinels have visited the United Kingdom.—Ed.*)

### SPOT-ON SPOTTING

ON 25th September, at about 5 p.m., a four-engined biplane flew over Sherborne. I think it was a de Havilland D.H.86, but as far as I know there are no aircraft of this type still flying. Can you confirm this, and if it is not a D.H.86, what else could it have been?—K. Goddard, Harking, Kings Road, Sherborne, Dorset.

(*It is a D.H.86. One is still flying in the United Kingdom, G-ACZP (four D.H. Gipsy Major 1c inlines)—c/n. 2321 of 1934—used for charter work, and owned by the Lan-*

## Letters (continued)

cashire Aircraft Corp., and resident at Squire's Gate, Blackpool. This is a case of positive identification, for our records suggest that no other four-engined biplane is at present flying anywhere in the world, except the D.H.86.—ED.)

### NEWS FROM NORWAY

ALL the F-84Es in the Norwegian Air Force have now been withdrawn from the fighter-bomber squadrons to form a P.R. unit. These carry a camera in the forward tips of the wingtip tanks. This far I have not seen the F-84 mentioned as a target-tower in the *Air Pictorial*. Here in Norway F-84s are used as high-speed target-tugs during air-to-air gunnery training. These aircraft are standard F-84Gs, and before taking off, the cable is attached to the bomb release on the pylon. A "stick" keeps the cable clear of the flaps.

It may also interest your readers to know that the two Junkers Ju 52/3 mW floatplanes belonging to S.A.S. are still flying. They are LN-KAF and LN-KAG.

In connection with the T.T. F-84s, I should like to mention that the aircraft used as T.T. usually have three black rings around the fuselage, behind the nationality markings. Squadron No. 333 now has PBY-5As and for air-sea rescue they use Bell 47Ds and Gs. All of the helicopters use floats.

Can any reader give me the marks, serial numbers, code-markings and letters of Norwegian Spitfires of squadrons Nos. 331 and 332?—T. F. Mydland, Godalsveien 11, Stavanger, Norway.

### GOING . . .

I SHOULD like to report that five Norwegian Air Force F-86K (not F-86D) Sabres landed at Manston on 16th October.—D. Townsend, 45 Canterbury Road, Margate, Kent.

### GOING . . .

... in the November *Air Pictorial* reader John A. Rogers reports having seen Norwegian Air Force F-86Ds at Sydenham airport. I am certain, however, that what he saw was the F-86K. On 18th October the following five Norwegian F-86K-1-NA Sabres were seen at Kastrup Airport, Copenhagen, en route for Norway:

2X-D (54-1243); 2X-E (54-1245); 2X-F (54-1247); 2X-G (54-1254); and 2X-H (54-1265).

What Mr. Rogers identified as "12X" (54-1261) would have been the squadron marking 1-2X on the port side of the nose which would read as 2X-1 on the starboard side.

Mr. R. B. Fitzpatrick (November Letters, p. 362) is correct in assuming that VH-BQK (ex-SE-BYZ) was the first SAAB-91C Safir, which made its first flight on 14th September 1953 at Ypenburg, piloted by Mr. Daan Lambernaut. Production of the Safir is as follows:

Type 91A (c/n. 91001 and 91101 to 91148) by SAAB; Type 91B by De Schelde (c/n. 91201 to 91275 and 91277 to 91305); and

### NORWEGIAN SABRE "KAY"

Herr Hans A. Kofoed has supplied this photograph of a Norwegian F-86K, photographed at Kastrup by Kurt Birlie.



Type 91C (c/n. 91276 and 91311 to ?). The latest Type 91C I have heard of is the SAAB demonstrator SE-CBH (c/n. 91315). Production in Holland is now complete but SAAB is to continue production at one of its factories.—Hans A. Kofoed, Norregade 39 III, Copenhagen K., Denmark.

### AND ANOTHER !

ONE of the new F-86K Sabres is at Gardermoen airport near Oslo. It is 2X-A (54-1251) and is being tested by Ray Renfroe. Greetings from two Norwegian readers.—Audun Sjurseike and Kaare Bremnes, Vaulen, Stavanger, Norway.

### WHAT HAPPENED TO . . . ?

IN answer to Mr. Stroud's query (November *Letters to the Editor*), I believe I can throw some light upon the fate of at least one of the Short L.17 aircraft. In 1939 both "Scylla" and "Syrinx" were at Exeter, where they were shadow-shaded brown and green, together with several of the "Heracles" class of airliner (and, incidentally, three Junkers Ju 52/3ms).

Quite early in the war one of the L.17s was dismantled. I think it was "Syrinx", but I have no records at hand. The other was flown away. However, the dismantled fuselage was used as an office of sorts, propped up behind the S.W. hangar, and perhaps some other reader may recall the registration.

Also at about the same time, there were at Exeter a Vickers Victoria (which to my knowledge was never seen to fly) and a radial-engined Fairey Battle (Bristol Taurus?) and a Vickers Wellesley. Of greater interest was one of the Fairey Unnamed prototypes (P.4/34) which frequently made a number of (apparently) mock dive bombing attacks across the airfield.

Later in the war, about 1944, I came across a R.N. Grumman Wildcat partly dismantled in a hangar at Exeter. It was fitted with a skid between the wheels, rather reminiscent of the old Avro 504 undercarriage, and a fully castoring tail wheel mounted at each wingtip! I have also often wondered what particular experiments this aircraft was engaged upon. Can any reader help?—M. W. Payne, 23 Canadian Avenue, Salisbury, Wilts.

(The obvious but not necessarily correct solution to the Wildcat mystery is its possible use as a "ground" trainer for pupil pilots learning the gentle art of ground looping.)

### IN THE SKY

I HAVE, on several occasions, seen aircraft throwing the "Blue Pencils" (mentioned by Mr. Parsons in your December issue) in front of them.

The shadows usually appeared in the early morning or late afternoon. At all times the aircraft connected with them were flying high, and sometimes the vapour trails were absent.

When the shadows appeared, however, there was always a small amount of haze high in the sky.

Of great interest are the deep channels that aircraft cut through some types of clouds.—P. A. S. Seivar, 3 High Street, Dry Dayton, Cambs.

On several occasions last May I saw the phenomenon mentioned by Mr. Parsons. Once it appeared as a shadow cast by a B-47's vapour trail on to a layer of thin cloud at 30,000 ft.

The shadow and vapour trail gradually converged and met as the B-47 passed through the cloud. When this happened the shadow and vapour trail ended abruptly.

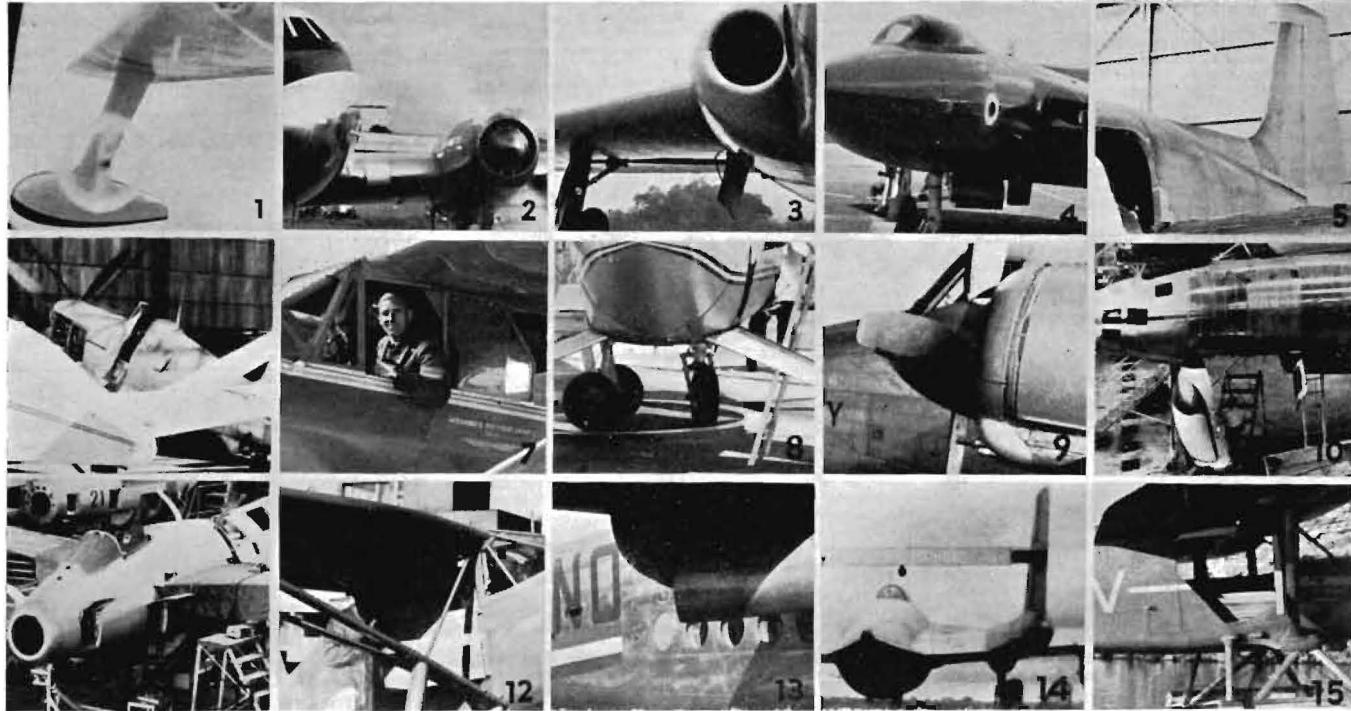
I have also seen Canberras home on to these shadows and follow them.—A. G. Boshier, 7 The Park, Harwell, Berkshire.

With reference to Mr. R. V. Parsons' letter about contrails and shadows and Mr. Fox's note (December issue), I had a similar experience in the early part of this year with an interesting variation which puzzled me for a while. In short, I spotted a fine contrail coming straight out of the sun which was fairly low down. This dazzling white contrail had a black twin which was also clearly defined against a background of thin altostratus, and incidentally proceeding the white contrail as Mr. Parsons describes. A number of people were watching with casual interest until the aircraft made a wide turn to port, curving from NNE to West. Much to their and my amazement, the black shadow continued straight on.—Maurice Austin, 609 Yardley Wood Road, Billesley, Birmingham 14.

(Many readers have written describing phenomena similar to those seen by Mr. Parsons and Mr. Fox. Several introduce a new variation in that when the aircraft concerned made a wide turn, the "blue pencil" continued straight on. Readers' letters indicate that the "blue pencil" can occur at any time of the day, and at any time of the year. The only common factor seems to be the presence of light cirrus cloud at high altitude. Readers are warmly thanked for their letters.)

# Detail Recognition

(the answers are on page 36)



## BRITISH REGISTRATIONS IDENTIFIED

by F. A. Hudson, British Civil register specialist of Registration Research

- G-ADLI M.3A Falcon (c.n. 206); J. W. Haggas & Partners; crashed near Elstree 10/9/52
- G-ADSR AW.27A "Ensign" B.O.A.C. (c.n. 1156); broken up at Cairo 1946
- G-AEUA Short 523 "Calypso" (c.n. 5843); Imperial Airways Ltd.; cancelled 1939
- G-AGLE Dragon Rapide (c.n. 6784, ex-NR.685); C. L. Burton; withdrawn
- G-AGXK Autocrat (c.n. 1951); Midland Aero Club; crashed at Staverton 20/8/53
- G-AGZJ Dragon Rapide (c.n. 6936, ex-RL954); J. H. Watts & Partners; withdrawn 1952
- G-AHGH Dragon Rapide (c.n. 6934, ex-RL952); Patrick Motors Ltd.; cancelled.
- G-AHGI Dragon Rapide (c.n. 6935, ex-RL953); Patrick Motors Ltd.; sold to French Indo China 1953
- G-AHSI Autocrat (c.n. 2029); Aerocontacts (Aircraft Distributors) Ltd.; sold to Spain 1955
- G-AHYY Sandringham 5 (ex-ML838); Menra Ltd.; broken up at Hamworthy Nov. 1955
- G-AHZE Sandringham 5 (ex-ML818); Menra Ltd.; broken up at Hamworthy Nov. 1955
- G-AIII Proctor 1 (c.n. HS61, ex-LZ800); The Darlington & District Aero Club Ltd.; sold abroad 1952
- G-AIIL Proctor 3 (ex-LZ790); M. L. Cherry; sold to Australia 1952
- G-AIRX Anson I (ex-AX232); Airwork Ltd.; sold as VP-KJH 1952
- G-AJBF Argus (c.n. 869); R. L. Whyham; sold as OH-FCH 1952
- G-AJKC Tudor Freighter 3 (c.n. 1368); Air Charter Ltd.; C. of A. expired 13/2/51
- G-AKCC Tudor 5 (c.n. 1421); William Dempster Ltd.; crashed on landing at Bovingdon 1951
- G-AKNT Solent 3 (c.n. SI298, ex-NJ206); M.T.C.A.; being overhauled at Hamble for South Pacific Airways
- G-AKSY Auster 5 (ex-TJS34); H. Wigley; sold as F-BGOO
- G-ALAR Messenger 4A (ex-RH371); H. P. Jennings, Monbasa; sold abroad
- G-ALFB Proctor 3 (ex-LZ770); Silver City Airways; sold to France 1951
- G-ANET Dragon Rapide (c.n. 6700, ex-HG715); sold to Aden Airways 1955

## FOREIGN REGISTRATIONS IDENTIFIED

by F/Lt. D. A. S. McKay, D.F.M., overseas civil register specialist of Air Britain

- AP-AGV Cessna 310 (c.n. 35906); Government of the Punjab
- D-CADO DC-3 (c.n. 25427, ex-F-OANY, VH-INM, VH-BHD); Deutsche Lufthansa
- D-EGEL Cub (c.n. 12838, ex-44-80542); Dr. Nüsken & Co.
- EI-AGA B.A. Swallow 2 (c.n. 500, ex-G-AFIH); R. Stuart
- EI-AGS Tiger Moth (c.n. 85115, ex-T6868); Weston Ltd.
- EI-AGR Tiger Moth (c.n. 84296, ex-T7932); Weston Ltd.
- F-BCJI Ercoope 415CD (c.n. 2007); Ets. Georges Brisset
- F-BCUA Bloch 161-P7 (c.n. 27); Air France
- F-BHCF Rapide (c.n. 6946, ex-G-AHEA; RL964); Service de l'Aviation Légère et Sportive
- F-BHEA Apache (c.n. 23-296); S.A. des Automobiles Peugeot
- HB-CAF Cessna 140 (c.n. 12839); Hermann Frey
- HB-GAF Beechcraft Twin Bonanza (c.n. CH.144); Transair S.A.
- HB-LBC Cessna 310 (c.n. 35027); owner not yet announced
- HC-SBA Grumman Goose; Shell Oil Co.
- LN-HAG Beechcraft D.17R; Vingtor Luftveier (no longer registered)
- OO-AAF Cub (c.n. 12168, ex-44-79872); Air Union
- PH-NBA Fokker F.25 (c.n. 6066); N.V.N.Y. Fokker (no longer registered)
- PH-NEB Tiger Moth (c.n. 85189, ex-G-AHRW, T6980); K.N.V.V.L.
- SE-AFN Miles Falcon (c.n. 216, ex-G-AEEG); Bengt Eriksson
- SE-BYD Firefly T.T. Mk. I (c.n. F7626); AB Svensk Flygjäst
- SU-AEV Bonanza (c.n. D.620); owner not yet known
- VH-UNW D.H.75 (c.n. 348); withdrawn from use, 1935
- VH-MMA DC-3 (c.n. 9583, ex-42-23721); McRobertson-Miller Airlines
- VR-TAN Dove 5 (c.n. 04055); Williamson's Diamonds Ltd.
- VR-NCB Heron 2 (c.n. 14083); West African Airways Corporation
- VR-NAA Freightliner 21 (c.n. 12775, ex-VP-YHZ, G-AIFO); West African Airways Corporation

ZS-DLO Heron 2 (c.n. 14078); Exchange Yard (Pty.) Ltd.  
ZS-MTD Dove (c.n. 04459); Messina (Transvaal) Development Co. Ltd.

The last six Vikings of B.E.A. (G-AIVB, G-AIVD, G-AIVF, G-AIBP, G-AHPP and G-AMGJ) have been sold to Aero-Express of Munich-Riem. Two have already gone to Germany, as reported in *Air Pictorial*, London Airport News (November 1955). They are D-CEDA and D-CEDO.

## INFORMATION WANTED

Details of units, Luftwaffe and R.A.F., successively based in Denmark during and after World War II. Exchange of historical aviation information from counterparts living in Norway, Sweden and Finland.—H. A. Kofoed, Norregade 39 III, Copenhagen K, Denmark.

Colour scheme, code markings, serial numbers, cockpit details and scale plans (prefer 1/72nd) of Beaufighter (torpedo or fighter version), Fw 190-A3, Grumman F9F-2W or F9F-5 Panther and Typhoon RP or F.1B.—P. A. Petersen, Rodtjornevæj 170, Vanl, Copenhagen, Denmark.

Destination and, if possible, serial of C-124 Globemaster seen over Bournemouth heading roughly E.N.E. at 1.15 p.m. on Saturday, 26th November 1955. I shall be glad to hear from anyone who saw this aircraft en route before or after it passed over Bournemouth.—B. K. Peggers, 56 Grosvenor Gardens, Boscombe, Bournemouth, Hants.

Mark numbers of Fireflies, Gannets and Invaders at Ringway, and Meteor outside R.A.F. Kirkham.—P. M. Row, 16 Sunnydale Terrace, Ossett, Yorkshire.

Details of squadrons, aircraft and crews who operated from the war-time airfield of Harby, Leicestershire.—M. Plimmer, 72 Thimblemill Road, Smethwick 41, Staffs.

Report of Battle of Britain display at R.A.F. Chivenor (North Devon), also information on the role of Chivenor since end of World War II.—J. C. Pritchard, 137 Southend Arterial Road, Hornchurch, Essex.

## WANTS, DISPOSALS AND EXCHANGES

### Wants

Any 1/72nd scale models of F-47 Thunderbolt, B-17 Fortress, C-47 Dakota, and any ex-war ministry scale models.—23038235 L/Cpl. Holmes, One Squadron, 7th T.R., Royal Signals, Catterick Camp, Yorks.

Aeroplane Spotter, single copies or complete volumes. State price.—L. Wilson, 16 Greenbank Drive, Cadby, Leicestershire.

(Continued overleaf)

## WANTS, DISPOSALS, ETC.

(continued from previous page)

Air Pictorial, April 1952.—C. Holland, 99 The Chase, Wallington, Surrey.  
Model Airplane News, June 1955, Dec. 1938; Flying Aces, Nov. 1939; Flight, 17th July 1953.—J. H. Robinson, 21 Elderberry Road, Ealing.

1/72nd scale plans of D.H. Dove; Miles Gemini, IA and 3A; Miles Hawk Trainer 3; Bristol 170, Mks. 21 and 32; D.H. 89A, Dragon Rapide; Viking 1B. State price.—C. Duxtable, 216 Woodlands Avenue, Eastcote, Middlesex.

British Aircraft (Saville-Sneath), Vols. I and 2.—R. A. Coates, Rookery Farm, Brinkworth, Chippenham, Wiltshire.

Aeroplane Spotter. Complete volumes or single copies.—P. W. White, 34 Buttrills Road, Barry, Glamorgan. Negatives, 616 size or larger, of any type of aircraft. Will buy or trade.—Major E. M. Sommerich, 111th Ftr. Bomber Wing (Ang), Phila International Airport, Philadelphia, Pa., U.S.A.

The Complete Flying Course (Roy Harben).—L. F. Drury, 23 Strathmore Drive, Crosby, Liverpool 23. Wanted pictures, serials, drawings, colour schemes, information, etc., of all types of Canberra (i.e. prototypes, production and experimental). Required for modelling. Bought if necessary.—C. Roberts-Wray, 59 Park Avenue, Thorpe Lea, Egham, Surrey.

Any of the J. C. Fahey books. Milestones, Volume 1. Good condition. Best prices paid.—K. S. West, 1026 Wimborne Road, Moordown, Bournemouth, Hants.

Prints and negatives of U.S. Navy and small air forces of the world. Also correspondents interested in above.—Wilhelm Jorgen Jensen, Oster Farimags-Street 15, Copenhagen K, Denmark.

Photos and recognition drawings of German, Italian and Japanese aircraft, will purchase or exchange.—C. Beilstein, 1021 Arlington Boulevard, Arlington Towers, J-325, Arlington 9, Virginia, U.S.A.

Wanted urgently, a photograph of the experimental Bristol Bulldog, powered by an Alvis Leonides engine, serial K3183.—C. Deyer, 35 Prince Charles Crescent, Sinehurst Estate, Farnborough, Hants.

### Disposals

Aerospaces, many copies of Aeroplane Spotter, also Aircraft Recognition Journals from 1940, also duplicates in excellent condition.—P. J. Morley, 136 Beecham Road, Reading, Berks.

For sale, four albums containing 885 original aircraft photographs. Many scale photographs, including S.A.A.F. and ZS registrations. Also 100 negatives.—

P. K. Coetzee, 837 Groots Street, Refontein-North, Pretoria, South Africa.

Air Pictorial, Jan. 1952 to Nov. 1955; Aeronautics, 1951 and 1952; Air Reserve Gazette; and many war-time books and magazines. S.A.E. for list.—B. Illston, 139 Carlyon Avenue, South Harrow, Middlesex.

Aircraft of the U.S.A., Volume 1; British Aircraft, Volume 2; Aircraft Identification, American types; Aircraft Identification, American monoplanes; Observer's Book of Aircraft, 1952, 1953 and 1954; Aircraft Recognition (Inter-Services Journal).—K. E. Cave, Wirrington, 24 Wood End Green Road, Hayes, Middlesex.

Negatives, prints and enlargements of light aircraft at the Jersey Air Rally, 1955.—H. C. Bougourd, Melbourne Cottage, Valnord Hill, St. Peter Port, Guernsey, C.I.

Some World War II and post-war 1/72nd scale models. S.A.E. for list.—R. Haycock, 9 Stannard Road, Dalston, London, E.8.

Air Reserve Gazette, all 1946 except Dec. Also Jan.-Feb. '47 and June '48. Air Pictorial, May-Sept. '50; June-Aug. and Oct.-Dec. '51; May-Dec. '52; '52-'53 complete. Total 65 copies. Offers.—J. A. Frall, 43A Bridge Street, Pinner, Middlesex.

Observer's Book of Aircraft, 1945 and 1949; Air League Aircraft Recognition Manual; The Royal Air Force 1941. 15s. the four, or sold separately.—P. Busbridge, 53 Ashburton Road, South Ruislip, Middlesex.

Large collection of books, magazines and photos. For sale. S.A.E. for list.—G. Veacock, 16 Epping Avenue, Park End, Middlesbrough.

Jane's A.W.A., 1945-46 and 1952-53. 32 copies Air Pictorial; German Aircraft, 1939 and 1945. Wanted, 1/48th scale plan Junkers 52/3M and Heinkel 111 K2.

—R. B. Morris, 20 South Street, Huddersfield, Yorks.

Air Pictorial, Oct. 1953-Nov. 1955 (except Sept. 1954); R.A.F. Flying Review, May 1953-Oct. 1955. Highest offer.—Vorwall, 44 Briarfield Road, Gosforth, Newcastle-on-Tyne.

For sale, 250 aircraft negatives (sizes 2½ by 3½, and 2½ by 2½); also 500 excellent photographs. S.A.E. for list.—R. Shanks, 27 Ascot Gardens, Knock, Belfast.

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(See page 35)

1. Piaggio P.136L; 2. Bristol Britannia; 3. Gloster Javelin (prototype); 4. Avro Type 707A; de Havilland DHA-3 Drover (prototype); 6. Beechcraft Bonanza (foreground), Supermarine Spitfire F. Mk. 16E (background); 7. Bellanca 31 Skyrocket; 8. Westland Sikorsky S-51 (Dragonfly); 9. Vickers Viking Ia; 10. Boeing B-47E Stratofortress; 11. SAAB J 29A; 12. Fairchild F.24R (Argus 3); 13. Avro York C. Mk. I; 14. de Havilland D.H.100 Sea Vampire (prototype); 15. Stinson SR 8EM Reliant.

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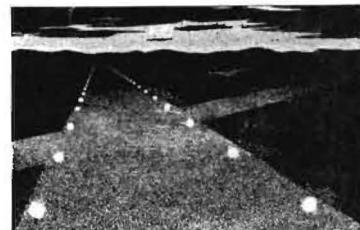
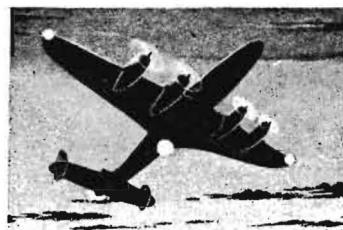
# LIGHTS AND BEACONS

Night-flying is full of difficulties. Navigation apart, the risk of collision apart, there is the difficulty of identifying the runway from the air, and the difficulty of identifying an incoming aircraft from the ground.

The problem has been solved partly by the use of lights. Aircraft carry navigation lights; airfields are identified by lights; runways are defined by lights. A simple and logical solution — and one devised by Nature for many of her creatures in the early youth of life on this planet.

Luminescence in living creatures is widespread. (Even some plants are luminous — bacteria in rotting fish and fungi in dead wood.) The most striking examples in the animal kingdom are glow-worms, deep-sea fish, and phosphorescent creatures of the sea's surface. Their light occupies the whole visible spectrum, without infra-red or ultra violet. It is produced by the oxidation of various chemically-complex substances made in specially-developed cells.

Why? In the case of bacteria one twenty-five-thousandth of an inch in diameter, luminescence is probably an accidental by-product of some organic process. In the luminous protozoa, minute starfish, and other drifting surface creatures, there may be a reason for the light — but we do not know it. Of the creatures who live in the perpetual darkness of the deepest seas, some probably use



light to see by, some to repel enemies, some to attract prey. But this is guesswork.

Only in glow-worms is the reason clear. These flashing, dancing miniature beacons use their light-signals to attract and identify each other. (An expert can tell the kind of glow-worm — there are many species — from the length of the flashes and the intervals between them.) Exactly-timed, unmistakably recognizable, the glow-worm's light is a perfect way of announcing his identity and whereabouts.

Man, in his recent invention of aircraft navigation lights and airfield identification lights, has borrowed yet another of Nature's ancient devices.

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